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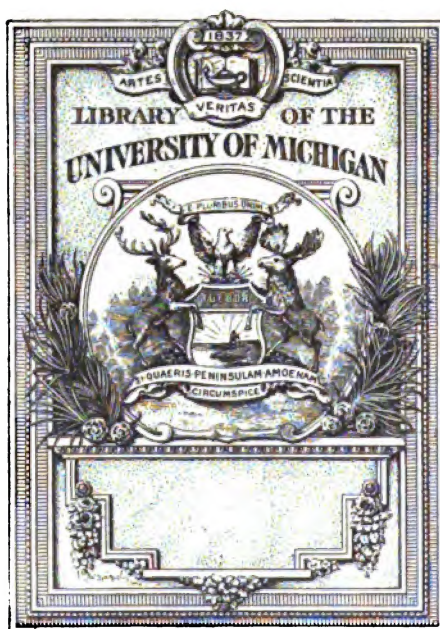
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**SOUTHERN WILD FLOWERS
AND TREES**

1940



PLATE CXIX. FLAME AZALEA. *Azalea lutea*;

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PRINTED IN AMERICA

SOUTHERN WILD FLOWERS AND TREES

Together with
SHRUBS, VINES AND VARIOUS FORMS OF GROWTH FOUND THROUGH
THE MOUNTAINS, THE MIDDLE DISTRICT AND
THE LOW COUNTRY OF
THE SOUTH

BY
ALICE LOUNSBERRY
Author of "A Guide to the Wild Flowers" and "A Guide to the Trees"
WITH SIXTEEN COLOURED AND ONE HUNDRED AND SIXTY-ONE
BLACK-AND-WHITE PLATES AND EIGHTY-EIGHT
VIGNETTES AND DIAGRAMS

BY
MRS. ELLIS ROWAN
Illustrator of "A Guide to the Wild Flowers" and "A Guide to the Trees"

With an Introduction
BY
CHAUNCEY D. BEADLE
OF THE BILTMORE HERBARIUM



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PREFACE.

THE reason to hope that Southern " Wild Flowers and Trees " will find a field of usefulness is that it is the first book written to treat in a popular way of the beauty and interest attached to plant-life through this great region. Sometimes we hear it said by those with no knowledge of botany that they " simply enjoy the flowers," thus implying that the smallest technical acquaintance with them would put them beyond the pale of such pleasure. But this is not enough. To learn of the kinship between plants; the characteristics on which their family trees are founded; their individual peculiarities and their keen desire to continue their race cannot, it would seem, but quicken our desire to know them well and enhance our wonder concerning their beauty. There is a time when the green things of the earth appeal strongly to those that live busy lives in the cities to go out and partake of the refreshment offered in a close walk with nature.

The present book is one that explains itself. It is simply written, and the plan of arrangement is in accordance with the leading scientific botanical works of the day. Beginning with the simplest forms of growth, the plants are entered until those most complicated in construction are reached. In all instances an effort has been made to present the scientific names as recognised under the laws of the new nomenclature, while many of the English names herein given have been learned directly from the people.

The botanical terms that it has been found necessary to use in the analyses of the plants have a chapter devoted to their explanation and are further made clear by illustrations. Rather than use for this book, which makes mention of over a thousand plants, some popular classification such as that of soil or colour, a simplified key to the plant families has been arranged. By its use the individuals may be located in the book with greater accuracy than by other means, and the satisfaction may be had of entering upon the study of plants in the right way. The book will thus be a better beginning; a better stepping-stone to those purely scientific.

To learn something of the history, the folk-lore and the uses of southern plants and to see rare ones growing in their natural surroundings, Mrs. Rowan and I travelled in many parts of the south, exercising always our best blandishments to get the people of the section to talk with us. Through

the mountainous region we drove from cabin to cabin, and nowhere could we have met with greater kindness and hospitality.

At the present time, however, there seems to be little country-lore concerning numbers of southern plants. In years to come, when they are better known, more tales of wonder will, no doubt, be woven about them. But for variety and beautiful, luxuriant growth the southern field is perhaps unrivalled.

Of our trips to different places, seeking flowers, the sixteen wash-drawings scattered through the book are in commemoration. The coloured plates show us as many more famous beauties.

Without continual reinforcement my courage would perhaps have met its Waterloo. I might never have written "Southern Wild Flowers and Trees." With much gratitude, therefore, I acknowledge the privilege accorded me of using the files of the Biltmore Herbarium and of receiving the advice and assistance of the associates of that institution, all of whom helped me in securing specimens and in searching out references. Dr. Carl Mohr, of Asheville, N. C., helped me out of some difficulties; Miss Harrison of Washington, Mr. McElwee of Philadelphia and numbers of people whom I met at various places—and whose faces I remember better than their names—were most kind in their assistance in my work.

ALICE LOUNSBERRY.

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INTRODUCTION.

WHERE are fairer flowers than those that deck the fields and forests of the south? From tide-water to peaks where trees have never dared to climb—from palms and hanging moss to painted-cup and balsams—and all between intensely interesting and bewildering! But now a guide appears to lead the novice to a knowledge of southern trees and flowers, one freed as much as can be from the brogue of technicality, that barrier between so many and the society of the flowers that beckon with their glances. None is more needed than a popular botany of the region, visited and viewed as it is by countless persons who seek the pines, the mountains or the coast, and to most of whom the flora is but a maze of forms and colours. To such, then, this volume appeals, and if by its guidance its readers are brought in closer touch with nature, or are led to see the greater wealth of floral beauty by the prismatic influence of stronger light, its mission will be of inestimable good.

The field of southern botany is but partially explored. New characters are being introduced, new histories written concerning the famous and obscure. Never has there been greater activity in the science, and were not the field so large the efforts of its devotees might quickly steal the secrets which hide from all but time and toil. What subject offers better problems or invites with better grace? The geography of plants which we know, the altitudinal distribution, adaptation or sensibility of this one or that, are but suggestive of the almost boundless phases that await, like the intricacies of chess, the progress of the players.

Through the pages which follow are descriptions and artistic reproductions of many trees and flowers that glisten, as it were, with white sands or mountain showers, or else we feel the shade of cool retreats, so faithfully has nature been consulted. The arrangement of plant families in close conformity to the system of classification destined to pervade the botanies of both popular and technical import is a commendable feature which, in connection with an attempt to adopt the oldest names, will quickly aid to pave the way to a knowledge of the southern flora in harmony with the progress of the times.

Biltmore Herbarium, Biltmore, N. C., July 16th, 1901. C. D. BEADLE.

Explanation of Terms.

Whether great or small, we find that phænogamous, or flowering, plants are provided with, as **organs of vegetation**, roots, stems and leaves; and that they may continue their race they produce flowers, which later mature fruit and seeds, these latter being known as the **organs of reproduction**.

Beginning with the **Roots**, those underground parts which absorb water and mineral substances from the soil, and anchor, especially the larger plants, in an upright position, we observe that they grow downward, away from the light, are usually much branched and produce many rootlets.

Aerial Roots, on the contrary, are a form which are produced in the open air.

Parasites are those plants, often without green colouring matter, the roots of which, or what answer for roots, are interwoven with other vegetation from which they drain their nourishment.

Saprophytic plants grow exclusively on dead vegetable matter.

Epiphytes are not parasitic plants, although they grow usually on other forms of growth.

Stems sometimes grow underground and assume somewhat the character of roots. As examples, the rootstock, tuber and bulb are common.

Tubers are the enlargements at the ends of a rootstock. Usually they are possessed of eyes, or buds. The common potato is a familiar example of a tuber.

A **Corm** is simply a rounded rootstock.

A **Bulb**, while similar in shape to a corm, is made up of fleshy scales.

Exogenous Stems (outside growing) are those which are associated with the greater number of our trees, shrubs and herbs. In them the cellular tissue or pith of the centre is surrounded by a zone of wood, encased in its turn by an outer bark.

Endogenous Stems (inside growing) have no separate arrangement of pith, wood and bark. Simply throughout their interior wood fibre is irregularly scattered.

When speaking of herbs, those stems which grow up vertically are called **Erect**,

Ascending Stems are those slightly and obliquely inclined.

Procumbent Stems are those which lie on the ground.

Decumbent Stems are the same as procumbent, but which raise themselves at the ends.

Creeping Stems run along the ground, and frequently root themselves freely from the nodes.

A Simple Stem is one that is not branched.

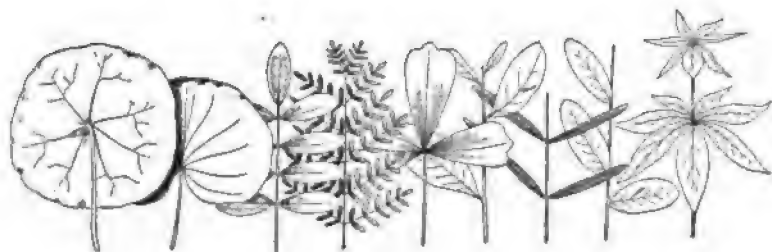
Leaves, as they are produced, follow three principal forms of arrangement. When but two grow at the nodes of the stem and have its semi-circle between them, they are spoken of as being **Opposite**. (FIG. 7.)

Alternate Leaves are those which occur singly at the nodes, one above the other and on opposite sides of the stem. (FIG. 8.)

Verticillate, or **Whorled**, describes leaves when three or several grow at intervals in a circle about the stem. (FIG. 9.)

Scattered Leaves are those occurring closely and all about the stem, such as are seen on hemlock branches.

The **THREE PARTS OF A LEAF** are its **Blade**, the broad, expanded network of veins and veinlets which support the soft, green, cellular tissue; the



FIGS. 1, 2, 3, 4, 5, 6, 7, 8, 9.

Petiole, or individual stalk on which the blade is raised; and the **Stipules**, these latter being a pair of small, blade-like bodies at the base of the petiole and often absent or inconspicuous.

All parts of a leaf are covered by a transparent skin, or **epidermis**, and according as the surfaces are rough or smooth it is spoken of as being:

Glabrous: meaning quite smooth,—that is, not provided with a coating or down of hairs.

Pubescent: when the surfaces are downy, or covered with fine hairs.

Tomentose: when the hairs which cover the surfaces are matted and woolly.

Hirsute: when covered with coarse, rather firm, hairs.

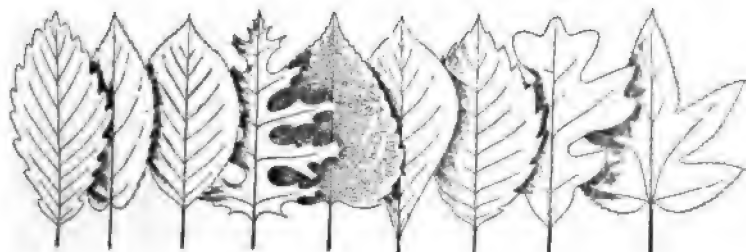
Ciliate : when provided with hairs that fringe the margins.

Glaucous : when the surfaces are covered with a white powdery substance called a bloom.

The **Midrib**, or **Midvein**, of a leaf is the central one of its framework, usually longer and more prominent than the others. The sub-divisions are known as **Veinlets** and the finest ones as **Veinulets**.

Not all veins and veinlets, however, are arranged in the same way. Leaves, therefore, are divided into two classes, according to their venation, the first being those that are **Netted Veined** and the second those that are **Parallel Veined**.

Under netted-veined leaves (FIG. 14), those in which the veins branch and rebranch from the midrib and form a close mesh or network, we have



FIGS. 10, 11, 12, 13, 14, 15, 16, 17, 18.

both **Pinnately-Veined**, or **Feather-Veined**, **Leaves**, and **Palmately-Veined** **Leaves**. Of these.

Pinnately, or **Feather-Veined**, **Leaves** are those wherein the veins, from the base to the apex, all start out from the sides of the midrib, as in FIG. 25.

Palmately-Veined **Leaves** differ from the former in having several veins of nearly equal size which from a common point at the base branch at various angles and extend to nearly the leaf's margin. (FIG. 18.)

Under the second division of leaf venation we find those that are **Parallel Veined**—their veins running side by side from the base to the apex of the leaf without intermingling, and being only crossed by almost imperceptible veinlets. (FIG. 23.)

Leaves assume a great variety of forms, which, primarily, may be divided into two large classes, **Simple Leaves** and **Compound Leaves**.

Simple Leaves are those with the blade in one piece.

Compound Leaves have their blades split into from three to many parts, each part forming then a separate leaflet, which may or may not have a little stalk of its own. (FIGS. 3, 4 and 5.)

Pinnate Leaves are forms of compound leaves in which the blade is split and the leaflets arranged at the sides of the midvein, after the same manner as leaves are pinnately veined. (FIG. 3.) Varieties of this form are these :

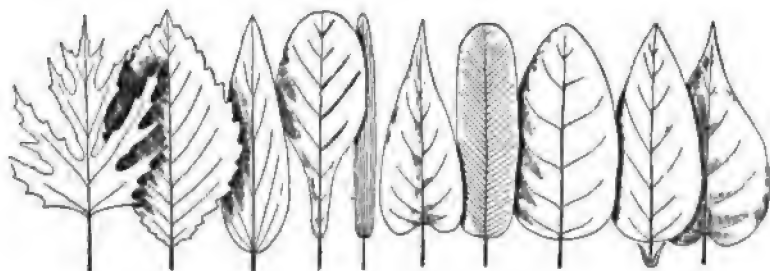
Abruptly Pinnate : wherein the leaf is terminated by a pair of leaflets.

Odd Pinnate : when one leaflet terminates the midvein, or again the terminal leaflet of this form, as in many vines, is changed into a tendril.

Palmately Compound Leaves have leaflets spreading from a common point at the base and follow the manner of palmately-veined leaves.

Leaves may be twice, thrice or more times compound when they are described by such terms as decompound, divided more than once ; bipinnate, meaning twice pinnate (FIG. 4) ; ternately compound, divided into segments of threes, etc.

Always are their leaflets subject to the same variations in construction as are simple leaves, and that some of their most common forms may be readily known the following terms are in use :



FIGS. 19, 20, 21, 22, 23, 24, 25, 26, 27, 28.

Filiform : very fine, thread-like.

Linear : when the leaf is several times longer than broad ; grass-like. (FIG. 23.)

Lanceolate : long and narrow ; broadening at or near the base and pointed at the apex. (FIG. 21.)

Oblanceolate : a reversed lanceolate.

Oblong : two or three times longer than broad and rounded at the extremities. (FIG. 25.)

Elliptical : the same as oblong, but tapering at both ends. (FIG. 12.)

Oval : broadly elliptical.

Ovate : when the outline is like the long section of an egg, the larger end being downward. (FIG. 26.)

Obovate : a reversed ovate. (FIG. 15.)

Cordate : the same as ovate, but with sides forming a notch at the base. (FIG. 28.)

Obcordate : a reversed cordate.

Spatulate : rounded at the apex and tapering towards the base, like a spatula. (FIG. 22.)

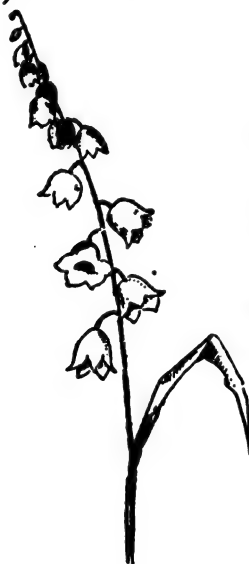
Orbicular : nearly circular in outline.

Peltate : as orbicular, but having the petiole attached at or near the middle of the leaf. (FIG. 1.)

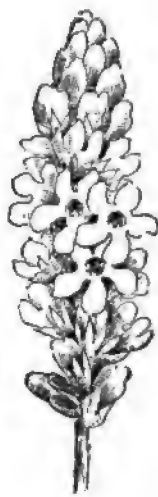
Reniform : similar to the base of a cordate leaf, the apex, however, being shorter and more rounded. (FIG. 2.)



Axillary.
FIG. 29.



Raceme.
FIG. 30.



Spike.
FIG. 31.

Auriculate : when at the base the leaf's sides are prolonged into two ears, or lobes.

Sagittate : when pointed at the apex and with acute basal lobes turned backward, suggestive of an arrow-head.

Much affected also is the appearance of leaves by the peculiarities of their margins, and to the different forms of which the following terms are in reference :

Entire : when the leaf margins form an unbroken line. (FIG. 24.)

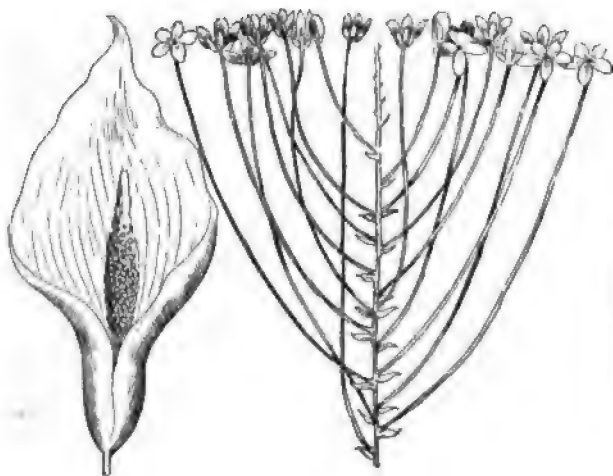
Undulate : when the margins are wavy.

Crenate: when the margins appear to be scalloped, or have rounded teeth. (FIG. 14.)

Serrate: when the teeth of the margins are short and sharp and point forward. (FIGS. 11 and 12.)

Dentate: when the teeth are large and point outward. (FIG. 20.)

Incised: when the teeth are uneven and jagged and extend well into the leaf.



Spathe and Spadit.

FIG. 32.

Corymb.

FIG. 34.



Aments.

FIG. 33.

Lobed: when the margins are cut so as to extend about half-way to the midrib, thus forming distinct lobes. (FIGS. 13 and 17.) Such leaves then are spoken of as being three-lobed, five-lobed, or according to the number existing.

Cleft as a term has much the same significance as lobed, but the incisions of the leaf reach more than half-way to the midrib. (FIGS. 13 and 19.)

Divided: when the incisions extend to the midrib.

Sinus is the term used to express the hollow or curve made between the projecting teeth or lobes.

Bracts are the modified leaves of an inflorescence and are under the flowers. Usually they are green, and differ in outline from the rest of the foliage, or they may be highly coloured and conspicuous.

The **Inflorescence** is the way in which the flowers are arranged on the stem. It may be either determinate or indeterminate.

A **Determinate Inflorescence** is one in which all the flowers have been produced from terminal buds; one that is indeterminate signifies that they have sprung from axillary, or lateral, buds.

A **Pedice**l is the individual stalk of a flower that is borne in a cluster.

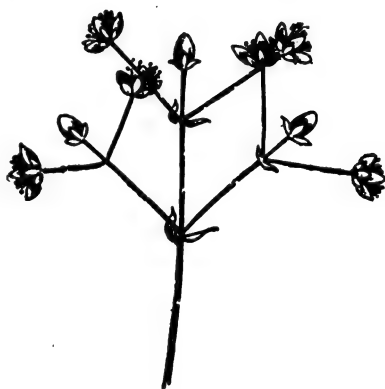
A **Peduncle** is the common stalk that upholds a cluster or a solitary flower.

Sessile is the word used when either flowers or leaves grow closely to the stems, or branches, and are without individual stalks.

When but one flower is produced at the end of a stem the inflorescence is **Terminal** and **Solitary**.



Simple Umbels.
FIG. 35.



Cyme.
FIG. 36.

It is **Axillary** when the flower, or flowers, grow in the leaf axils,—that is, in the angle formed by the leaf, or leaf-stalk, and the stem. (FIG. 29.)

A **Raceme** is a flower-cluster wherein the individuals are arranged along the sides of a common stalk and raised on pedicels of almost equal length. (FIG. 30.)

A **Panicle** is simply a compound raceme.

A **Thyrus** is a compound panicle, very compact and pyramidal, or oblong, in outline.

A **Spike** is like a raceme in all else but that its individual flowers are sessile. (FIG. 31.)

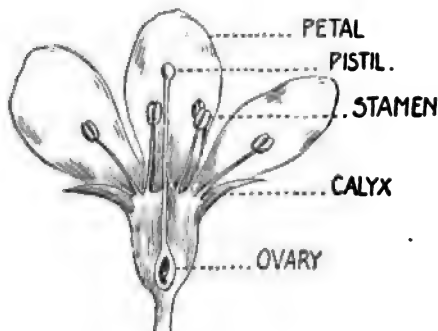
A **Spadix** is a fleshy spike, usually enveloped by a leaf-like bract called a **Spathe**. (FIG. 32.)

An **Ament**, or **Catkin** (FIG. 33), is a scaly sort of spike wherein the flowers are apetalous,—that is, having no corollas. The trees especially bear flowers in aments, they being often composed exclusively of either staminate or pistillate flowers.

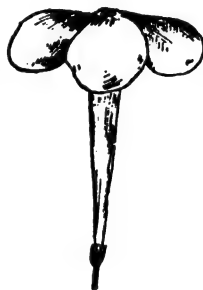
A **Head** or **Capitulum** is a short, dense spike that in outline is globular.

A **Corymb** differs from a raceme in that its lower pedicels are elongated, thus enabling all the flowers of the cluster to reach about the same height. (FIG. 34.)

An **Umbel** is a cluster in which the pedicels branch from the same central



Parts of a Flower.
FIG. 37.



Salver-shaped.
FIG. 38.



Campanulate.
FIG. 40.

point as the ribs of an umbrella. (FIG. 35.) When occurring compound the little clusters are called umbellets.

A **Cyme** is a flat-topped flower-cluster, and differs from an umbel in that its innermost flowers are the first to open. (FIG. 36.)

An **Involucre** is an arrangement of bracts which subtend or hold a flower or flower-cluster. The thistle family present examples of involucre.

Staminate Flowers are those possessed of stamens, but which have no pistils, or but rudimentary ones. **Pistillate Flowers** are just the reverse of those that are staminate. When both of these sorts of flowers are borne on the same plant it is said to be **Monœcious**, meaning in one household; when, however, they are borne on different individuals, the plants are called **Diœcious**, in two households.

Flowers possessing both of these necessary organs of reproduction, the stamens and pistils, are **Perfect** ones, and when this is not so they are **Imperfect Flowers**.

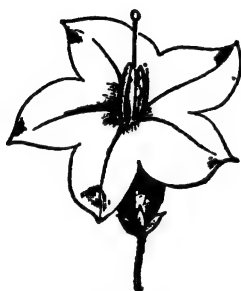
Neutral Flowers have neither stamens nor pistils.

A **Complete Flower** is one which has both of the organs of reproduction, and also those of protection, the calyx and corolla.

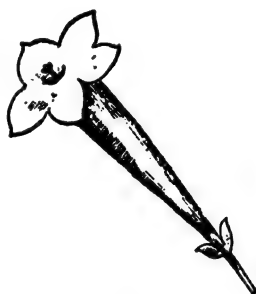
Incomplete Flowers are lacking in one or more of these parts.

Regular Flowers are symmetrical, the parts of each set of their organs being alike in size and form, while **Irregular Flowers** show often great variations in their respective parts.

The **Calyx** (FIG. 37) of a flower is the outermost set of leaves at its base which rests on the receptacle or end of the flower-stalk and usually encloses the corolla and organs of reproduction. When divided to the base the leaves of the calyx are called **Sepals**. It then may further be described as being **Polysepalous**.



Wheel-shaped.
FIG. 39.



Tubular.
FIG. 42.



Strap or Ray Flower.
FIG. 43.

Should, however, the sepals be wholly or partly grown together, the calyx would be called **Gamosepalous**.

The **Corolla** is the usually showy and inner set of leaves of a flower. Its separate leaves—that is, when they are divided to the base—are called **Petals**, and the corolla would then be termed **Polypetalous**.

When it is wholly or partly grown together it is known as being **Gamopetalous**.

Both the calyx and corolla are described as **Parted** when their parts are divided to nearly the base; **Cleft**, or **Lobed**, when divided to about the middle; and **Toothed** when the lobes are very small.

Under **Gamopetalous Corollas** some of the different forms are best described as being:

Salver-Shaped: when the border spreads out flatly and at right angles to the summit of the tube. (FIG. 38.)

Wheel-Shaped : when the tube is very short and the border spreads out in a way suggestive of the divergent spokes of a wheel. (FIG. 39.)

Campanulate, or **Bell-Shaped**, when towards the summit the tube gradually expands and the border is inconspicuous. (FIG. 40.)

Funnel-Form : when a narrow tube spreads gradually to a wide border. (FIG. 41.)

Tubular : when the tube is long, narrow and widens but little towards the summit. (FIG. 42.)



Funnel-shaped.
FIG. 41.



Papilionaceous.
FIG. 46.



Legume.
FIG. 51.

Ligulate : when strap-shaped, as in the dandelion. (FIG. 43.)

Labiate : when the corolla is so divided as to form two parts, or lips. In such instances usually two petals have united to form the upper lip, while the three other petals have formed the lower lip. These two are then described separately according to their peculiarities. (FIG. 44.)

Under **Polypetalous Corollas** we find these named :

Rosaceous : when the petals are without claws and quite distinct, as in the rose.

Cruciferous : when there are four petals raised on claws and spread out in the form of a cross. (FIG. 45.)

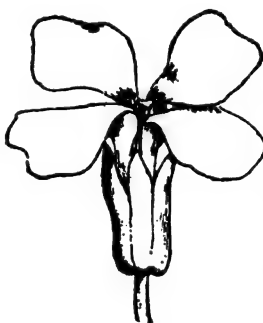
Papilionaceous : when the parts are so divided as to show a large upper petal as the **Standard**, or **Banner**; the two side petals as wings; and when the two anterior petals are united into a shape resembling the prow of a boat and which encloses the organs of reproduction. (FIG. 46.)

Sometimes it happens that only one set of floral leaves is present, which then is regarded as the calyx. The term **Perianth**, while sometimes employed collectively to designate the organs of protection, is mostly used in such cases as when the calyx and corolla are not distinguishable the one from the other. Members of the lily family have perianths.

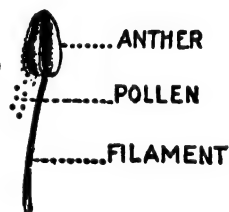
The **Stamens** of a flower are composed of **Filaments**, or the **Stalks** which uphold the **Anthers**, and the **Anthers** themselves. These latter are tiny two-celled boxes which contain the **Pollen**, the fertilizing dust and the important product of the stamens. (FIG. 47.)



Labiate.
FIG. 44.



Cruciferous.
FIG. 45.



Parts of Stamen.
FIG. 47.

Exserted Stamens are those which protrude beyond the corolla.

Included Stamens are those entirely within the corolla.

Monodelphous Stamens are those which by their filaments are united.

The **Pistil**, or **Seed-bearing Organ**, is composed of three parts; the **Ovary**, the **Style** and the **Stigma**. (FIG. 48.)

The **Ovary** is the lower and enlarged part, which contains the ovules or undeveloped seeds.

The **Style** is the slender stalk projected by the ovary.

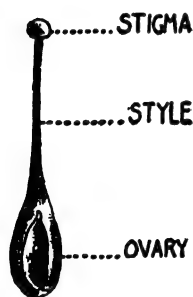
The **Stigma** is the variously formed body which terminates the style. Unlike all other parts of the plant it is not covered with an epidermis, but is

moist and rough, that it may better retain the pollen that falls on its surface.

After such pollen grains have touched the stigma they send forth from their under surfaces minute tubes, which pierce through the style until an ovule in the ovary below is reached and quickened into life. This process is known as that of **Fertilization**.

Cross-Fertilization takes place when the stigma of one flower receives through some extraneous agency, such as animal life or the wind, the pollen from a stamen in another than its own flower-cup.

Self-Fertilization, on the contrary, is when the stigma receives the pollen



Parts of Pistil.

FIG. 48.



Samara.

FIG. 49.



Capsule.

FIG. 50.

from a stamen borne in the same cup as itself. In general this is not regarded as being as beneficial as when cross-fertilization takes place, and to prevent its occurrence flowers are often most curiously constructed.

The **Ovary** is that part of the pistil which enlarges into the fruit, or seed vessel, and the ovules then grow into seeds.

A **Carpel** is a part of a compound ovary.

Fleshy Fruits are such as berries, wherein the ovary has become pulpy, or fleshy.

A **Pome** is another sort of fleshy fruit. It shows the calyx-tube as adherent to the ovary and forming the greater part of the fruit. Apples are familiar pomes.

Stone Fruits are those which are partly hard and partly fleshy.

A **Drupe**, such as a peach, or cherry, is a stone fruit. The outer part of the ovary has in ripening become soft like a berry, while the inner part has hardened.

Dry Fruits are those wherein the seed vessel hardens, remains herbaceous, or else is membranous in texture.

Nuts are dry, usually one-seeded fruits, and are held by such varied involucre as a chestnut burr or an acorn cup.

A **Samara**, or **Key-Fruit**, is furnished with a membranous wing. (FIG. 49.)

An **Achene** is a one-seeded fruit which does not open.

A **Capsule**, or **Pod**, is a dry but many-seeded fruit which when ripe opens in one piece and scatters its seeds. (FIG. 50.)

A **Legume** is a simple pod, which when ripe, however, opens in two pieces. (FIG. 51.)

A **Cone**, or **Strobile**, is made up of a number of flat bracts which subtend pistils, and so overlap each other as to form a thick spike, or head.

Seeds, or the ripened ovules, contain within themselves the miniature and rudimentary plantlet known as the **Embryo**.

The **Hypocotyl** is the stemlet of the embryo, and from the base of which grows downward the root.

The **Cotyledons**, or **Seed Leaves**, are the first ones which a plant produces, and often are completely formed in the embryo. It is in accordance also with the number of these first leaves that plants are termed, should there be but one, **Monocotyledonous**; when there are two, **Dicotyledonous**, and **Polycotyledonous** when, as in the pine family, there are many seed leaves.

THE CYCAS FAMILY.

Cycadaceæ.

A small group of trees or shrubs, represented in the United States by two species of the genus Zamia, having simple trunks, and their growth continued by means of a terminal bud. Leaves : pinnately divided, coiled in the bud. Flowers : diœcious, destitute of either calyx or corolla, the ovules of the fertile ones being borne without ovaries.

COONTIE. WILD SAGO.

Zamia pumila.

FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
<i>Cycas.</i>	<i>Spreading.</i>	<i>Low.</i>	<i>Florida.</i>	<i>May, June.</i>

Leaves : from a short trunk, the long, grooved petioles covered with a reddish scurf. *Leaflets :* numerous, about five inches long, lanceolate or linear-lanceolate ; sessile ; bluntly pointed at the apex ; parallel-veined ; glabrous, or slightly pubescent on the under side ; usually entire. *Flowers :* growing in cone-like aments. *Seeds :* drupe-like ; oval or rounded.

A familiar sight in the wet, outlying grounds of southern Florida is this plant, where it occurs as a low and spreading shrub. In its buds the great leaves are coiled in much the same way as are those of ferns and very gracefully they unfold while spreading their slender leaflets. By means of a terminal bud the plant continues its growth, and in the young plantlet it is interesting to notice that there are two cotyledons, while the hypocotyl ends in a spiral cord. More simple in construction even is this genus than the great one of the pines ; the little ovules also being naked and fertilized directly by the fall of the pollen.

Besides thoughts of beauty in its embellishment of the landscape there are serious interests of commerce associated with "Coontie," as it is mostly called by the people. Abounding in its stem is starch, and the arrowroot of Florida which is produced from it has attained considerable renown. Until about fifteen years ago this industry was controlled by the Seminole Indians who through the sales of arrowroot made quite a satisfactory revenue in what they termed silver money. The puddings in which it is used are very good, being somewhat similar to those of cornstarch.

THE PINE FAMILY.

Pindceæ.

A large group of resinous trees or shrubs with evergreen or non-evergreen leaves which, in outline, are mostly needle-shaped or scale-like. Stamens a few together, subtended by a bract or scale. Ovules several, or solitary, borne on the surface of a scale and generally subtended by a bract. Calyx and corolla, none. Fruit : a cone with several or many, either woody or fleshy scales, or sometimes a drupe.

**YELLOW PINE. SHORT-LEAVED PINE. SCRUB PINE.
BULL PINE.**

Pinus echinata.

FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
<i>Pine.</i>	<i>Pyramidal ; branches regular, spreading.</i>	<i>40-120 feet.</i>	<i>Texas and Florida to Staten Island.</i>	<i>May, June.</i>

Bark : greyish brown ; rough ; much broken into plates. *Branchlets* : green or purplish ; stout ; glaucous when young. *Leaves* : three to five inches long ; dark bluish green ; simple ; growing closely along the branches in bunches of two, or sometimes three and occasionally four on the young shoots, and having sheaths at their bases ; diverging widely at maturity ; needle-shaped ; slender ; dark green, and rounded on the outer side, hollowed on the inner one ; evergreen. *Cones* : one and a half to two and a half inches long ; ovate ; clustered or solitary and lateral ; becoming rough and jagged as they grow older. *Scales* : thick at the apex, and tipped with a weak, projecting prickle which often falls early.

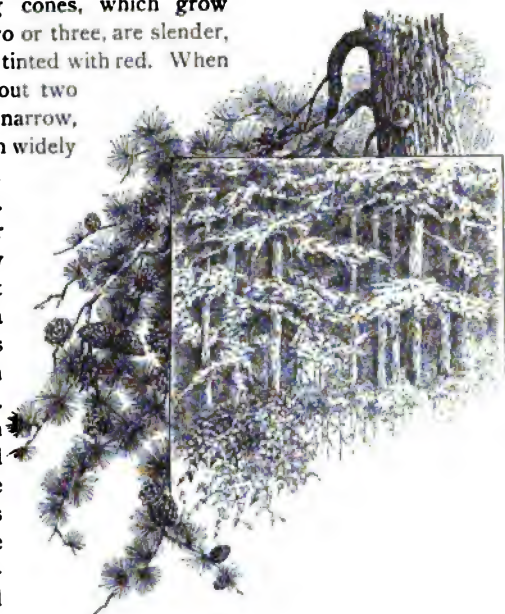
Through the south, from the mountains to the coast-line, there is seen an abundance of this fine, sturdy pine which here, as in the middle states, is known to the people as "our yellow pine." Even although often pronounced "yaller" the name is still a more appropriate one than that of "short-leaved pine," as it is also called ; for, in the south, other species occur with leaves quite as short. The tree is but moderately resinous. In a light, clayey soil it thrives best, its timber becoming very coarse when subjected to an extremely fertile mould.

P. glabra, Walter's pine, or spruce pine, is very local in its habit and seldom found growing over fifty miles away from salt water. It favours swamps and hummocks from South Carolina to the Gulf region of Louisiana, or grows in dense woods often with magnolias, the yellow pine and beeches. More compact than any other of the Atlantic pines is its oval-shaped crown, and its growth is rapid and steady. Its leaves are borne, two in a bunch, along the branches. They are smooth, deeply channelled above and rounded on the under sides. In length they average about three

inches long. The young cones, which grow singly or in clusters of two or three, are slender, pyramidal, and somewhat tinted with red. When mature they measure about two inches long and have narrow, rounded scales which open widely at their apices and project an early-falling bristle.

P. clausa, spruce or sand pine, as it is locally called, inhabits the coast and central part of Florida and may be known by its fine, flexible leaves which also grow in groups of two. It is there found much branched from its base and growing to about the height of thirty feet. Its specific name refers to the fact that its very interesting cones have closed scales, or those which

rarely open. In outline they are conical and vary in colour from silvery grey to dull red. As they refuse to open or fall the gradual growth of the tree surrounds them until they are quite buried within the trunk and branches. We think naturally of the cones' object in life being to guard the young seed until it is developed and mature enough to make its own way in the world, and then to open and foster its escape; it is therefore a matter of wonder just why this species so often falls short in accomplishing the act to which all its former deeds have been directed.



PRICKLY PINE, HICKORY PINE, TABLE-MOUNTAIN PINE.

Pinus pungens.

FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
Pine.	Head: narrow, branches: short, ascending.	30-50 feet.	In Alleghanies Pa. to Ga.	May.

Bark: reddish brown; when old, rough and broken into plate-like scales. *Leaves*: dark bluish green; two to four inches long; simple; growing closely along the branches in bunches of two or sometimes three, and having sheaths at their bases; needle-shaped, the outer side round and smooth, the inner side grooved; stiff. *Staminate flowers*: growing in a dense spike near the base of the season's shoots. *Pistillate ones*: clustered on the twigs of the preceding year. *Cones*:

pale; reddish brown; three to four inches long; oblong or ovate; sessile, and frequently growing in clusters of four, or more; very heavy. Scales: woody, with a stout, hooked spine.

To watch the development of the young leaves of *Pinus pungens* when they begin to burst from their embracing bud scales, which finally unite about their bases and serve them as sheaths, is a pretty sight. They are then a tender, sunny green. Another of the tree's points of beauty is its cones which hang in clusters and in succession are persistent for a number of years; showing, therefore, on the tree the various stages of their growth. These cones are also unusually heavy and project the sharpest and stoutest spines of the South Atlantic species.

The name table-mountain or prickly pine has been associated with the tree for many years, and the country people, many of whom do not at all distinguish between the different species of pines, at one time thought it to be an exclusive inhabitant of flat-topped mountains.

P. Virginiana, Jersey pine, is very often mistaken, through the south, for *Pinus echinata*, and bears without distinction the common name of short-leaved pine. This is rather unfortunate, as in such an event confusion must necessarily arise. It were better, it would seem, to separate the two individuals, by associating this tree simply with its more local title, as New Jersey is but little south of the northern limit of its range and it there grows abundantly. The tree presents an irregular growth which, with its short, stubby leaves in bunches of two, aids greatly in its identification. Commercially, it is usually too small to be of much value and it has besides an undesirable amount of sap wood.

P. rigida, pitch pine, before it became supplanted by the richer pines of the south, was greatly valued for the large amount of pitch contained in its wood and for its free produce of tar and turpentine. It is usually resinous, very desirable for fuel, and is frequently made into charcoal. In appearance it is irregular and rough, quite awkward, in fact, as are many of the pitch pines, while its branches are crowded on the trunk. This makes its timber very knotty. It is also coarse. The tree forms a great part of "the pines" of New Jersey and covers considerable tracts of land along the New England coast. From New Brunswick it extends to Virginia and Kentucky, and is found in the mountains of North Carolina and Tennessee. Its leaves, which are from three to six inches long, grow three in a bunch and have short sheaths at their bases. On their surfaces they are almost imperceptibly marked with white dots. The cones grow in clusters of from two to four and their scales at the apices are thickened and tipped with a recurved and stiff prickle.

P. heterophylla, Cuban or Elliott's pine, is found in low ground near the



PLATE I. PINES ON THE ROAD TO HIGHLANDS, N. C.

As we made our way up this steep trail the sun ceased to shine. It rained furiously. On every side of us it struck, drenching our faces until we were unable to see. In the early morning the thermometer had been at ninety degrees, but here the hail, as large as good sized marbles fell about us abundantly. Our charioteer, marking off about ten inches on his whip, said: "Like enough 'twill fall so deep." It was then two o'clock in the day, and the same chill and uncompromising darkness prevailed as is felt at night. Tall pines loomed up before us as black pyramids. Only when the shadows lifted could we see them clearly.

(1.)

coast and extends from South Carolina and Florida to Louisiana. Its leaves, often ten or twelve inches long, are slightly file-like along their margins and have a raised ridge on their undersides. They grow in bunches of two or three. The cones also are very large and attractive looking, especially when they widely and irregularly open their scales. These are long and narrow and project at their apices a recurved point. Also at their tips they are a rich brown and so glossy as to give the appearance of having been varnished. Elliott's pine is said to inhabit the Bahamas, several of the islands of the West Indies and the mountains of Central America.

P. serotina, pond pine, an inhabitant of swamps near the coast, and which occurs from Florida to North Carolina, bears leaves which resemble somewhat those of *Pinus heterophylla*. They are, however, not so long and of a more yellow tone of green. Perhaps in general appearances the tree most closely suggests *Pinus rigida*, that is, if one puts aside the fact that the branches of the latter are very crowded. The cones of *Pinus serotina*, which grow in clusters about the branches, are seldom over two and a half inches long. In their early days they are pyramidal in outline, but at maturity when their long narrow scales have opened widely they are almost as broad as they are long, and have then quite a squatty look. They are not, however, devoid of charm for they are covered with a silvery sheen. Their prickles are short and fragile.

LONG-LEAVED PINE, SOUTHERN YELLOW PINE, GEORGIA PINE.

Pinus palustris.

FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
<i>Pin.</i>	Head round, open; trunk slender.	70-80-120 feet.	North Carolina south- ward to Texas.	March, April.

Bark: orange-brown, separating into thin scaly plates. *Leaves*: ten to fifteen inches long; dark bluish green; growing closely in bunches of three, and forming thick tufts at the ends of the branches; sheaths from one to one and a quarter inches long; slender; flexible. *Cones*: six to ten inches long; light brown; cylindrical. *Scales*: thick, with small, blunt spines at their ends, and at maturity spreading at right angles to the axis.

This remarkable tree of the lower district is well known throughout its locality. Indeed, its beauty when young, and the horizontal spread of its great branches, would make it a notable figure in any landscape. Its very long leaves also, tufted as they are at the ends of the branches, produce a soft plume-like and startling effect when stirred by a strong breeze. Every year an abundance of these leaves is shed by the tree and from their fibre a certain sort of matting is made as well as a material for bags which are used to cover cotton bales. In fact, the fibre of these pine needles is in

some places known as an excellent disinfectant and native surgeons make use of it when dressing wounds. And in the field of vital usefulness this tree is more prominent than any other one of the pitch pines, as it is also the most beautiful. There is very little sap-wood in its timber and the resinous matter is well distributed. Besides, therefore, having its timber used for various constructions, it supplies the greater part of our turpentine, tar and pitch. The tree is, however, greatly effected by the quality of the soil in which it grows and becomes, in very rich mould, considerably less resinous.

In passing along on the railway from North Carolina to Florida, acres and acres are to be seen covered with this tree. But there the greater number of individuals have lost their beauty through the process of boxing, which is employed to obtain their products, and often but a tuft of green at their summits proclaims that they are still alive. A melancholy, solemn air pervades these gaunt creatures so mercilessly given over to commerce. It is only lightened by the beauty of many soft young ones cropping up through their midst.

P. Tæda, old field, or loblolly pine, grows up, as one of its common names implies, in old fields and clearings and although it affords considerable turpentine it is not much worked. The wood, on account of its coarse grain, is usually sawed into large pieces. From Texas and Florida it occurs, in dry or moist soil, northeastward to New Jersey and is very common in North Carolina. It is a large, rugged tree, often one hundred and fifty feet high, and bears its leaves, which are from six to eight inches long, in groups of three. They are fine and flexible and highly coloured. The young cones when growing at the base of the new growth look as though their scales were unevenly set and very sharp-pointed. In fact, as long as they remain closed they present something of this appearance. But when the scales are let widely loose, that the seeds may escape, they are extremely pretty and are tipped with a soft fawn colour. By many this tree is known as the frankincense pine, and when growing in swampy ground, the North Carolina woodsmen call it rosemary pine.

P. Strobus, white pine or Weymouth pine, a marked and well known figure among our silva, can be distinguished from the often grotesque pitch pines by the graceful growth of its great whorled branches; the smooth bark clothing the young trunks; and by the fact that its leaves, with their soft, silky sheen, grow five in a group. They are three-sided and quite rough along their margins. This white bloom which covers their under surfaces produces as they are waved upward by the wind swift and enchanting changes of light against masses of bluish green. The resinous cones are slender, cylindrical and slightly curved. Their scales are thin,

broad and rounded at their apices. Undoubtedly the tree is among our most beautiful ones and is well known from Georgia to Manitoba.

In 1705 it was planted by Lord Weymouth on his grounds at Chelsea, in England, and soon became known under his name as one of the first American trees which thrive well in Europe, although there a good deal of damage is wreaked upon its young leaves and bark by the nibbling of deer. Throughout New England and Canada its timber is largely used for various purposes, but in those localities, as in Michigan it has been, through the unremedying stride of the axe, considerably exhausted. New tracts of it, however, are being opened up southward. In Mitchell County, N. C., and extending into adjoining territory, there has lately been purchased a tract containing 210,000,000 feet, the largest forest of this noble tree in the south. The contract under which it was sold demanded that the land should be cleared within ten years. It is therefore being steadily felled.

One day when near enough their neighbourhood for the people to be willing to relate stories concerning these trees, Mrs. Rowan and I had rather an amusing experience. Although previously warned against its perversity and danger we were to ride from Cranberry to Montezuma on the little railway originally constructed to carry out the lumber, and the charter of which compelled it to carry a passenger coach. We had so determined on account of the superb scenery through which it was reputed to pass. As best we could, therefore, having come on from Roan mountain, we spent the morning at Cranberry waiting for the train to be ready. It was to start at one o'clock. That hour then found us in our places. The engine gave its farewell salute. We were fairly off and had run up to a high ridge, when the train stopped. In such a place there were surely no passengers to take on, nor had we broken down. A wire had simply caught us, the conductor explained, stating that the car was to be held for the train from Johnston City which carried the all powerful person of the road's superintendent.

"How long shall we be detained?" we asked meekly.

"W-aal, till 'bout five or six o'clock, providin' she's not late," the conductor answered.

This appalling piece of information and the prospect of sitting in that dismal place for so long a time kindled us with a mighty indignation.

"Can nothing be done?" we asked, and were told "I reckon you-uns kin sit thar."

Leaving the train with the languid protestation ringing in our ears, "Ef y'll believe me, you-uns kin go down thar, but 'twon't do you'uns no good," we made as quickly as possible for the ticket office. Here, fortunately, sat a man of sense, who, when we informed him that the train should go on

even if we had to push it ourselves, realised that the case was desperate. In a few minutes he had telegraphed to the superintendent at Johnston City, taken down his answer and turning to us said, not without a shade of grace : " We've got that train to go on for you, ladies."

" Let us take the word back," I said, grasping at the opportunity for revenge on the conductor. When again we reached the ridge, it was a long, stiff walk, this personage with the passengers sat complacently on the bank. Perhaps they thought that time was made for slaves.

" The train is to go on," I said, handing him the yellow missive. He made an effort, opened wide his eyes, arose and shook out his great frame as he read slowly :

" Have Justice run to Montezuma and return for me,

(Signed) Hamlin."

" That 'ere means to go on," he said with deliberation. " I obey's orders." And on we did go. Slowly we crept over the high trestle work, as the little engine puffed and blew. On every side were mountains and deep gorges. It was a wonderfully beautiful ride. When it was over we were full of regret.

BLACK SPRUCE. HE BALSAM.

Picea Mariàna.

FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
<i>Pine.</i>	<i>Trunk straight ; branches drooping.</i>	<i>30-90-100 feet.</i>	<i>North Carolina to Canada.</i>	<i>March-June.</i>

Bark : greyish brown ; slightly rough. *Branchlets* : greenish when young and pubescent. *Leaves* : seldom over two-thirds of an inch long ; dark blue-green ; simple ; growing thickly all along and on every side of the brown twigs ; needle-shaped ; four-sided ; curved or straight ; rigid. *Cones* : one-half to one and a half inches long ; rich purple, and turning later to reddish brown or tan colour ; ovate or ovoid ; solitary, and drooping near the ends of the branches ; often persistent for many years. *Scales* : rounded ; persistent ; thin, with entire or scalloped borders.

It is a strange conceit of the mountaineers in the Alleghanies to call this tree the " He Balsam," a name indiscriminately applied by them to both the black spruce and the red spruce, *P. rubens*, which grows in southern Virginia. And thinking perhaps that it should have a mate of their choosing they call the beautiful silver fir, the " She Balsam." The spruces bear, however, on the same tree both staminate and pistillate flowers, a fact perhaps not appreciated when these vernacular names were bestowed. The general name of " Black Spruce " is in reference to the dark green foliage of the tree which in certain lights appears sombre and black. The species is very variable, some perplexing forms of it being presented. The slender form which occurs in the mountains of North Carolina and Virginia is possibly the individual that Dr. Chapman calls, in his Flora, *Picea alba*, the *Picea Canadensis* of later botanists, a tree, however, which is not known



PLATE II. CAROLINA HEMLOCK. *Tsuga Caroliniana*.
(9)

in the South. When growing in the open *Picea Mariana* is usually an imposing spectacle, especially when its boughs extend to the ground. In swamps and bogs, or other moist soil it is found while it attains to its best development in high altitudes. In the northern states the pale red timber of the black spruce is used in ship building. Long ago, also, the Indians taught the Europeans to boil the young twigs with honey and use the extract in a brew which produces spruce beer.

CAROLINA HEMLOCK. (Plate II.)

Tsuga Caroliniana.

FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
<i>Pine.</i>	<i>Pyramidal.</i>	<i>20-80 feet.</i>	<i>Virginia to northern Georgia.</i>	<i>April, May.</i>

Bark: reddish, or grey; scaly, and becoming more rough and furrowed with age. *Twigs*: brownish, or grey; pubescent; lower branches, pendulous. *Leaves*: about one half inch long; scattered along the branchlets; needle-shaped with tiny petioles; blunt at the apex, flat, grooved on the upper side, entire, glabrous above and covered with a white bloom underneath; persistent. *Cones*: one to one and a half inches long; solitary; drooping at, or near the ends of the branchlets; ovate-oblong. *Scales*: ovate, rounded at the apex, widely divergent. *Wings*: long, narrow.

Along the Blue Ridge Mountains in groves and on the sides of the steep ravines, which contribute so much to the rugged effect of their unusual scenery, there is found not infrequently the Carolina hemlock. At Cæsar's Head, an outlying and elevated spur in Greenville County, S. C., I first saw it growing. It appeared a most beautiful tree with so full and brilliant a spray that it quickly attracted the attention.

T. Canadensis, common hemlock, or spruce pine, attains in the mountain ravines to the very fulness of development. Its tall, columnar trunk, sometimes one hundred feet high, and its wide-spreading, declined branches produce a strong and light, fern-like effect among the other abundant and heavier foliage. The leaves it bears are smaller than those of the preceding species, as are also the scales of its cones. These latter do not diverge very widely when the seeds are ripe and anxious to effect an escape. Both of the hemlocks have a lithe, fine beauty, but as this one grows through the Alleghanies, it attains such splendid proportions and has so dignified an air that it appeared to me to be quite unrivalled by any of the other coniferous trees. Its frequent companion is *Magnolia Fraseri*. Should, however, two hemlocks of equal size be placed together, the verdict would probably be given to the Carolina one as being the more beautiful.

The common hemlock appears to be well known by the mountain people who take some pride in their acquaintance with it. They ascribe to it the merit of revealing the points of the compass by leaning always its top to the east. Few of them could tell me anything concerning the uses of its timber, all declaring that they hadn't "heard on anything." Through their



PLATE III. SILVER FIR. *Abies Fraseri*.

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region, however, it is true that the trees, although remote and inaccessible, are much sought by lumbermen and tanners. Their timber is very valuable, as its durability is great and it has a strong capacity for holding nails. For framing and in various constructions, it is used, and tannin abounds in the bark in considerable quantities. From Nova Scotia and Quebec the tree grows also westward to Wisconsin and southward to Georgia and Alabama. The oil of hemlock is obtained by the distillation of its twigs.

SHE BALSAM, SILVER FIR. FRASER'S BALSAM FIR.

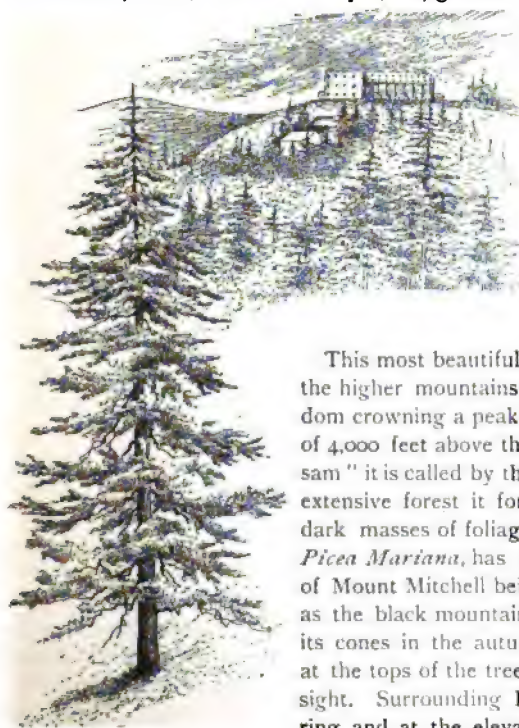
(Plate III.)

Abies Fràseri.

FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
<i>Pine.</i>	<i>Pyramidal.</i>	<i>30-70 feet.</i>	<i>Virginia to North Carolina and Tennessee.</i>	<i>May, June.</i>

Bark : dark brown; smooth and marked horizontally with resinous blisters. *Leaves* : slightly over one half inch long; scattered thickly along the upper side of the branches; linear, blunt at the apex, flat, grooved through the middle and

having a raised ridge on the lower side; bright green and lustrous above; silvery below because covered with a bluish-white bloom; fragrant; evergreen. *Cones* : one to one and a half inches long; erect; oblong, sessile, their scales broad and shorter than the inner bracts which are toothed at their apices and project short, reflexed prickles.



This most beautiful of the firs inhabits only the higher mountains of the Alleghanies, seldom crowning a peak that has not an altitude of 4,000 feet above the sea level. "She Balsam" it is called by the mountaineers, and the extensive forest it forms in proximity to the dark masses of foliage of the "He Balsam," *Picea Mariana*, has probably been the cause of Mount Mitchell being so generally known as the black mountain. When glowing with its cones in the autumn, which grow often at the tops of the trees, it is a most attractive sight. Surrounding Roan's fair summit as a ring and at the elevation where other abun-

dant verdure must cease, it, with the rhododendrons, forms a distinctive verdure. Here in its best loved haunt it was a great pleasure to see it growing. On Grandfather Mountain we found it not nearly so abundant nor did it so crown the mountain as it does on Roan, perhaps the most beautiful peak of the Alleghany chain. At a little station called Balsam in N. C. we saw a few of these trees which had been planted, but with that exception their home is on the very high mountains. When leaving Roan Mountain I took with me a great meal bag filled with the foliage of this fir, as I wished for a pillow. And all those that met us on the way down, when seeing it, called out, "no need to tell, you'uns hev' bin up the mountin."

The clear and thin liquid, balsam, as it is called, which exudes from the blisters on the trunk and tips of the branches, is regarded as useful by the natives to cure cuts and sores, their natural hardness aiding them to stand up under its severe application. They also use the wood occasionally for the construction of their cabins and gather its foliage abundantly for pillows. From the ordinary standpoint of commerce it is not thought to be very valuable and in any case its remote habitat would make it inaccessible.

BALD CYPRESS. CYPRESS. (Plate V.)

Taxodium distichum.

FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
<i>Pine.</i>	<i>Conical; branches spreading.</i>	<i>60-150 feet.</i>	<i>Mississippi valley, Gulf, and Coast region to Delaware.</i>	<i>April.</i>

Bark: reddish brown; fissured, scaly and fibrous in age. *Branchlets*: slender, distichously forked. *Leaves*: light green; simple; growing closely in two ranks along the branches; half an inch long; needle-shaped; pointed; also occurring awl-shaped and overlapping each other; deciduous. *Flowers*: monœcious; yellowish; appearing some time before the leaves. *Staminate flowers*: growing compactly in terminal, drooping paniced spikes. *Pistillate ones*: growing in small clusters. *Cones*: usually less than one inch in diameter; light brown when ripe; pendulous at, or near the ends of the branches; globular; the several angular scales forming a closed ball until mature.

By Dr. Charles Mohr, who has made an exhaustive study of the coniferous trees of America, the bald cypress is regarded as being the most wonderful individual of them all; and considerably over a hundred years ago Bartram wrote of it: "This cypress is in the first order of North American trees. Its majestic stature is surprising. On approaching it we are struck with a kind of awe at beholding the stateliness of its trunk lifting its cumbersome top towards the sky and casting a wide shadow on the ground as a dark, intervening cloud, which from time to time excludes the rays of the sun. The delicacy of its colour and the texture of its leaves exceed everything in vegetation." And so he continues to speak about it enthusiastically. Among its peculiarities it has a ready means of adapting itself to

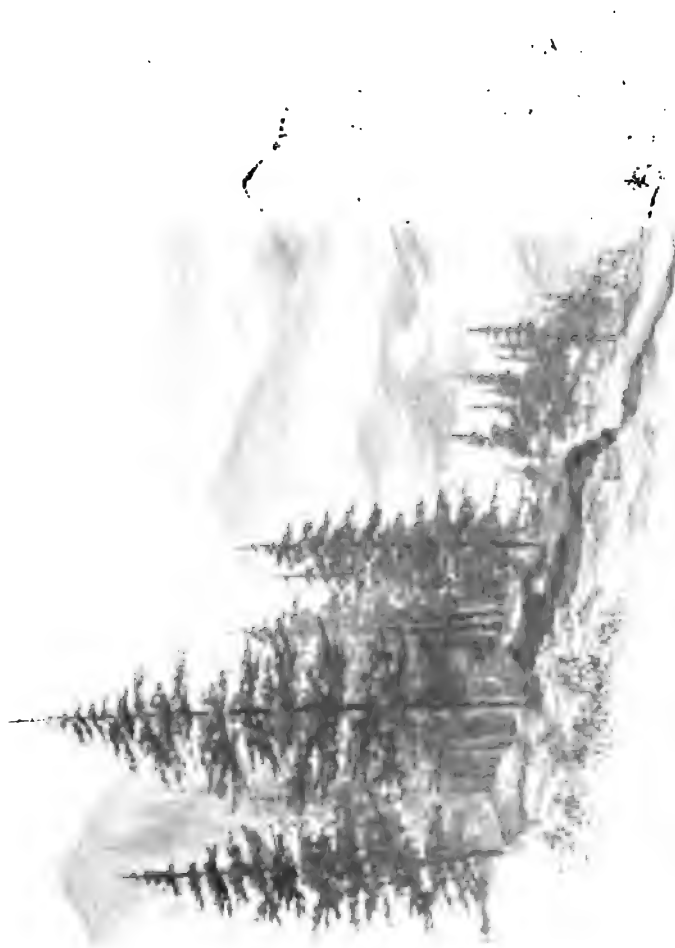


PLATE IV. THE SILVER FIR ON ROAN MOUNTAIN.

On Roan Mountain, the highest human habitation east of the Rockies, the clouds play an important part in man's existence. When they float high and the sky is clear, he has a smile for every one; he regards the universe as a limitless expanse of moulded heights upon which his position allows him to gaze. But when they take his home for their resting place, and enshroud and fall far below the mountain, he scowls upon them as his enemy. They limit his sphere and his vision. His other enemy is the snow. About Christmas time it begins to fall. Then he must retire to his cabin, taking the wood for his fireside and provisions with him even as a squirrel carries nuts to his hole. Cut off thus from all communication with the outer world, he has still one green and fragrant friend. It is the beautiful silver fir.

To the mountaineer who was to remain in the Cloud Land Hotel over the winter, I said:

"Do the people about here love this tree?"

"No, Marm," he answered.

"Do they love the flowers?" I then asked.

"No, Marm," he said.

"Do they use any of the plants to cure illnesses?" I persisted. He shook his head.

"What do they do?" I asked.

"They lets 'em come and go."

(iv.)

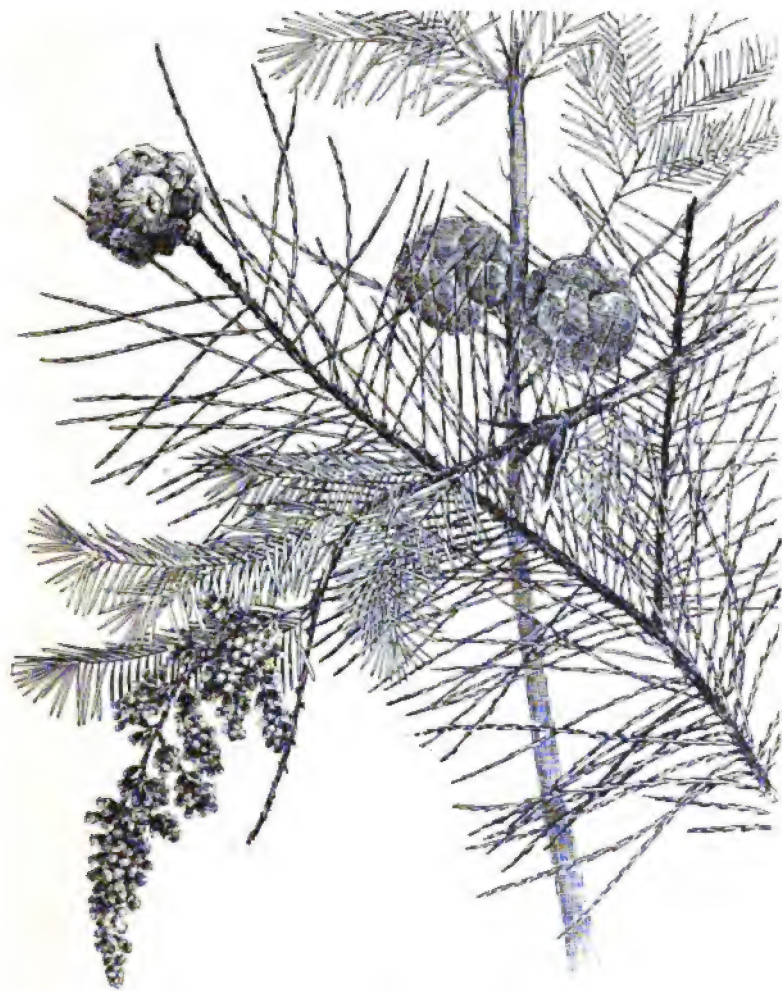


PLATE V. BALD CYPRESS. *Taxodium distichum*.
(13)

the various conditions of atmosphere and soil under which it grows. Its foliage is, in fact, little affected by dryness or an excessive amount of moisture, for on the same tree different forms of branches and foliage will sometimes be found to exist, and these are capable of either aiding or preventing the escape of moisture. There are on the distichously-spreading branchlets leaves which are linear-lanceolate and flat and which favour the escape of moisture. While on the very fine, pendulous or erect branchlets there are tiny closely-appressed leaves whose mission is just the reverse.

The much discussed feature about the tree, however, is the way in which its base is buttressed by great, hollow structures which spring from its roots and are commonly known as "knees." When the tree grows in water they are always produced, and in this case they grow high enough to emerge. Sometimes a hundred of them form under the water a great labyrinth which only becomes apparent when the swamp is drained. Should the tree inhabit moist soil they are less conspicuous and often when it occurs in dry soil they arise not at all above the surface of the ground.

In the long ago, St. Pierre, in his innocence, put forth the idea that these knees were especially designed to protect the tree against icebergs. But now when the light of a later science has shone upon them, it is thought that they serve it mechanically, by anchoring it with a herculean grasp in an uncertain, yielding soil and by aiding it to resist heavy gales and storms. To gain even greater strength they often wrap themselves, as does a vine, about other forms of growth. The opinion is also held that these knees are of physiological service to the tree in acting as organs of aeration,—that is in facilitating the process of assimilation and thus furthering its nutrition and well being. As a land-builder the tree is one of the greatest, and does this service through a part of the country where swamps and long moss are the principal features of the landscape. Its interlocked roots and knees give support to many sub-aquatic plants which are anxious to grow while they, in their turn, as they die down each year, add deposits of dried leaves which contribute in bringing the marsh to the level of other land.

In Louisiana and the Gulf states the cypress wood is sought for all such purposes as interior finish, the panellings of doors, sashes, and for the large tanks used in factories. It is especially desirable for the making of shingles, which are said to last upwards of forty years. By lumbermen, the black, white, red, yellow and variegated wood is recognised. From the outward appearance of the tree, however, it is impossible to tell which sort it will yield, although the young trees nearly always produce white wood. Formerly the Indians of Mississippi made their canoes from the tree's hollow trunk.



PLATE VI. SOUTHERN WHITE CEDAR. *Chamaecyparis thyoides*.
(15)

SOUTHERN WHITE CEDAR. (Plate VI.)

Chamæcyparis thyoides.

FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
<i>Pine.</i>	<i>Spire-like; branches horizontal.</i>	<i>30-90 feet.</i>	<i>Florida and Mississippi to Maine.</i>	<i>April, May.</i>

Bark: light reddish brown; very fibrous; separating into loose scales. *Branchlets*: brown; their thin bark also separating. *Leaves*: tiny; simple; ovate and awl-shaped; overlapping each other like scales and growing closely together in rows of four, up and down the branchlets. Dull brownish or blue-green; glaucous. *Flowers*: monœcious, growing in few flowered terminal aments. *Cones*: hardly one half an inch wide; globose; sessile on leafy branches; purplish at maturity; glaucous, and opening towards the centre when ripe, not towards the base. *Scales*: thick; several-pointed and as though fastened at their centres. *Seeds*: one or more under each fertile scale; oval; winged at the sides.

It would seem as though among non-botanists, there were some slight difficulty extant about the distinguishing of this tree from the arbor vitæ, the two are so often mistaken, the one for the other. This could hardly be said of the careful observer, and especially when the fruits of the trees are beginning to mature. That of our plant is a round, drupe-like cone, bluish purple, covered densely with a bloom and which turns at maturity to dark, reddish brown. It is always quite different in shape and aspect from the ovate, tan-coloured product of the arbor vitæ. In leafage also the trees are dissimilar, the branchlets of this one being quite without the peculiar flatness which characterises the other. In the south, our tree is mostly hidden away in swamps where its life is best known and of the most import to lumbermen.

The wood of *Chamæcyparis thyoides* is valuable and adaptable for many purposes. Its aromatic, pungent odour, among other things, makes it prized by the people for buckets or casques, as the water they hold partakes somewhat of its flavour. Oils also are well preserved in vessels made of this wood. From the young stalks a considerable amount of charcoal for gun powder is procured.

ARBOR VITÆ. WHITE CEDAR.

Thuja occidentalis.

FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
<i>Pine.</i>	<i>Conical; branches pendulous.</i>	<i>20-65 feet.</i>	<i>Virginia and N. Carolina to Hudson Bay.</i>	<i>April, May.</i>

Bark: greyish brown; tinged with orange or red, and separated into narrow, deciduous strips. *Leaves*: simple; opposite; blunt; scale-like and overlapping each other as they grow closely together on branchlets that are very flat. Bright green; aromatic; especially so when bruised. *Flowers*: monœcious, terminal. *Cones*: tiny; yellowish brown when mature, glaucous when young; ovate; nodding

and opening to the base when ripe. *Scales*: six to ten; oblong; without points; smooth. *Seeds*: one or two, with thin broad wings notched at the apex.

While always a tree of distinct and beautiful habit, the arbor vitæ does not attain in the south the ample proportions, nor grow as abundantly, as it does northward. In fact, along the mountainous streams of the Alleghanies, where, however, it is only found at high elevations, it is a rather small tree. Perhaps there is none other which in formal gardening has been so great a favourite, and as a result of its constant subjection to cultivation many extraordinary varieties are being produced. Besides being used for one of the most compact and lively coloured hedges, the plant is sometimes chosen to cut into fantastic shapes, a hideous fashion, which, however, calls forth a certain amount of wonder, especially if, as one I recently saw, the outline is in imitation of a peacock.

As a tree necessary to everyday welfare the arbor vitæ was long known to the Canadian Indians who used it in the construction of their canoes and partly made their baskets from its thick layers of sapwood. The wood is fragrant and in colour a pale, yellowish brown. With the fresh branches brooms are made and a tincture is procured from the young growth through a process known to the "yarb doctors." Another of its benefits is its power of curing warts.

FLORIDA PENCIL CEDAR. (*Plate VII.*)

Juniperus barbadensis.

FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
<i>Pine.</i>	<i>Conic, irregular when old.</i>	<i>15-40 feet or more.</i>	<i>Florida to Mississippi and Texas.</i>	<i>April, May.</i>

Bark: reddish brown, and separating into long shreds. *Inner bark*: smooth, polished. *Branches*: greyish; rather smooth. *Leaves*: tiny; simple; opposite; sessile; scale-like, ovate, pointed at the apex and overlapping each other as they grow along the four-sided, slender branchlets; evergreen. *Flowers*: dioecious; growing in aments. *Cones*: fleshy; berry-like; blue; short peduncled, globular, or slightly ovate.

It has now been finally settled by American botanists after a long struggle that this beautiful plant is a distinct species; most text books having formerly referred it to the red cedar, *Juniperus Virginiana*. It is found usually near the coast and is extremely attractive when its misty tinted, berry-like cones are sprinkled among the soft, sage-green of its foliage. They are somewhat smaller and inclined to be more ovate than the fruit of the common species. The little branchlets are particularly slender and pliable. To see the inflorescence of the tree a magnifying power of one hundred degrees is required.

For a long time the wood of this tree has been held in the highest esteem

for making pencils. It is softer and finer than that produced by other species; but so nearly exhausted has it been for this purpose that manufacturers now have to content themselves with the still steady supply of *Juniperus Virginiana*.

J. Virginiana, red cedar, or savin, has perhaps the happiest knack of versatility of all the trees and occurs in various forms from a low shrub to a tree, often one hundred feet high. Throughout North America it is more widely distributed than any other coniferous one, accommodating itself readily to every condition of soil. In Kentucky and Tennessee on the limestone hills it forms the "cedar brakes," and grows also luxuriously in swamps and lowlands of the Gulf States. In general appearance its leaves are like those of *Juniperus barbadensis*. They are ovate, scale-like and grow opposite in pairs, or in rows along the slightly four-sided branchlets. Only when the tree is very young are these leaves needle-shaped and spread out from the then rounded twigs. During the winter they lose their bluish glaucous look and become considerably darker. The drupes sit jauntily on their short peduncle-like branchlets and are produced very abundantly. They appear to be a soft, pastel shade of blue, a tint occasioned by the bloom with which they are covered.

The fragrant, bright red wood of the tree is valuable, as it does not decay, and is much used for closets and chests, being objectionable to moths. It is, however, most closely associated with the making of lead pencils. In fact, it is a matter already under consideration to know which tree will step into the breach when its abundant supply shall have been exhausted. From the waste material which occurs in making these pencils a paper is manufactured. It is used under carpets, and quite as extensively for wrapping up furs, for its pungent odour is reputed to keep out moths.

By the distillation of the tree tops a volatile oil is obtained known as that of the red cedar.

J. nana, low juniper, is also a very widely distributed shrub of the United States and is well known as an inhabitant of Europe. Possibly its specific name will eventually give way to that of *Sibirica*, an earlier publication, when the plants are better represented in herbaria from their extreme ranges. It is at best a low, sprawling shrub frequenting high mountain tops in the south. Its lanceolate-linear leaves grow in whorls of three and densely clothe the branchlets. They are stout and rigid and as sharply pointed as needles. On their upper sides they are bright green and glaucous and emit when dried a strong fragrance. The berry-like cones are sessile and larger than those of the preceding species. There is something very invigourating and fresh in the aspect of this plant, especially when it grows in its irregular way over the ground. For a long time the North American Indians have used

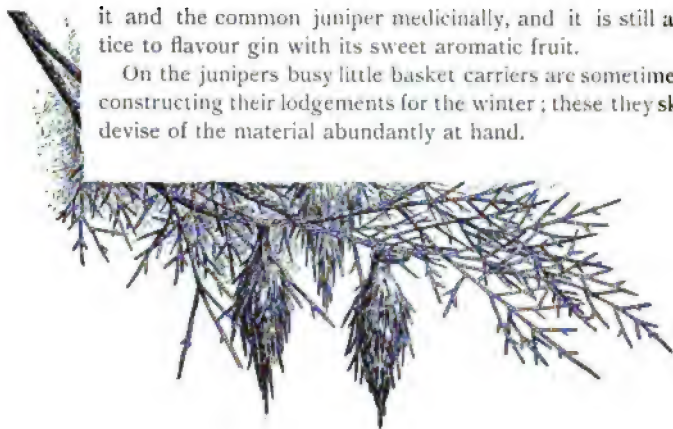


PLATE VII. FLORIDA PENCIL CEDAR. *Juniperus barbadensis*.
(19)

THE PINE FAMILY.

it and the common juniper medicinally, and it is still a practice to flavour gin with its sweet aromatic fruit.

On the junipers busy little basket carriers are sometimes seen constructing their lodgements for the winter; these they skilfully devise of the material abundantly at hand.



THE YEW FAMILY.

Taxaceæ.

Represented in our range by two species of evergreen trees or shrubs with linear leaves, dioecious, axillary flowers, and drupe-like, fleshy fruit.

TORREY TREE. STINKING CEDAR. (Plate VIII.)

Tumlon Taxifolium.

FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
Yew.	Pyramidal, branches pendulous.	10-40 feet.	Western Florida.	March. Fruit: Sept.

Bark: brownish grey and tinged with orange; rough. *Wood:* lemon-yellow, satiny. *Sapwood:* lighter coloured. *Branchlets:* olive-green. *Leaves:* often one and a half inches long; growing two-ranked along the branches; sessile, or with very short petioles; linear; sharply and rigidly pointed at the apex and rounded at the base; bright olive-green and lustrous above and having parallel grooves underneath on either side of the midvein; resinous. *Staminate flowers:* growing along the branches in short compact clusters and having bracts at their bases. *Pistillate flowers:* few; solitary, nearly sessile and at the base covered with im-

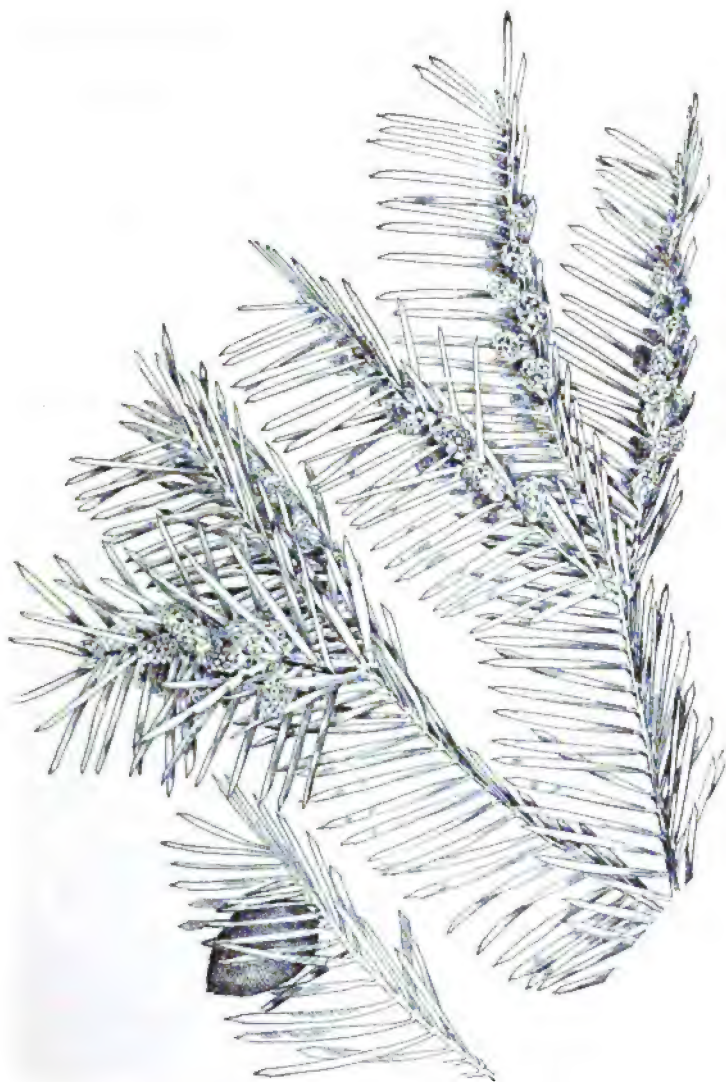


PLATE VIII. TORREY-TREE. *Tumou Taxifolium*.
(21)

bricated scales. *Drupe*: about an inch and a quarter long; obovate; purple, with edible, oily seed.

An old settler of confirmed habits is this rare tree which seems to cling, as a last refuge, to the dry, calcareous soil of western Florida in the region of the Chattahoochie river. Here amid a flora of extreme interest it may be looked upon as the type of its genus; for only widely apart in the forests of western California and in China and Japan can it claim any connections. About its foliage and branches there is an aromatic, fœtid odour which first caused the natives to christen it by the name of stinking cedar; but since they have learned to associate it with John Torrey, and known that many eminent men have travelled to so distant a region to see it, their respect for it has increased and they now more frequently speak of it as the Torrey-tree.

Its beautiful wood is hard and strong, much desired in cabinet work and furnishes for fence posts an indestructible material.

YEW.

Taxus Floridana.

FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
<i>Yew.</i>	<i>Spreading, bushy.</i>	10-25 feet.	<i>Western Florida.</i>	<i>March, April. Fruit: Oct.</i>

Bark: purplish brown, smooth. *Leaves*: one half to three quarters of an inch long; growing along the branches and spreading as though two-ranked; narrowly-linear, short petioled, pointed at the apex and narrowed or rounded at the base; flat; dark green, the upper side lustrous and having as the lower side a raised ridge running through the middle; thin, persistent in drying, not resinous. *Staminate flowers*: growing in globose clusters. *Pistillate ones*: solitary. *Fruit*: red, drupe like and enclosing one seed.

Growing with *Tumion Taxifolium* in its restricted district is also found this rare tree which elsewhere is not known. In connection with its fruit a curious incident may be of interest. Not until 1895 was it collected in a ripe state, and then it was only done through the persistence of Dr. Charles Mohr. Even the natives had never noticed that the tree bore fruit, although this is not altogether unusual, for over and over again they will be found to be indifferent to the phenomena about them. At first Dr. Mohr examined the staminate trees, and then turning to one that was pistillate was well nigh discouraged to find upon a superficial glance that it appeared to be equally barren. When he finally, however, lifted up the branchlets, the secret was revealed, for on their under sides, completely hidden from the public gaze the fruit grew in relative abundance.

THE WATER-PLANTAIN FAMILY.

Alismaceæ.

Belonging to this group are mostly water plants with fibrous roots and scape-like, smooth stems. Their long petioled leaves arise from the base where they are sheathed about the scape. The flowers are perfect, monœcious or dioecious, generally small and produced in racemes or panicles.

WATER PLANTAIN.

Alisma plantago-aquatica.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Water-plantain.</i>	<i>Rose-white or white.</i>	<i>Scentless.</i>	<i>General.</i>	<i>June-September.</i>

Flowers: small; numerous; growing loosely in a whorled panicle on a scape from six inches to two and a half feet high, and having small, linear bracts at the bases of their pedicels. *Calyx:* with three persistent sepals. *Corolla:* with three deciduous petals. *Stamens:* six. *Pistils:* numerous, in a single whorl. *Leaves:* long, oval, abruptly pointed at the apex and narrowed, or cordate at the base; entire; thin.

Growing in mud or shallow water, this tall and rather unattractive plant is a familiar sight. Its leaves closely resemble those of the common doorway plantain, which fact, in connection with its loose spray of tiny flushed flowers, makes it readily recognised. The rhizomes have been collected and eaten as articles of food by a number of tribes of North American Indians.

LANCE-LEAVED SAGITTARIA. (Plate IX.)

Sagittaria lancifolia.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Water-plantain.</i>	<i>White.</i>	<i>Faintly fragrant.</i>	<i>Texas and Florida to Delaware.</i>	<i>June-September.</i>

Flowers: both staminate and pistillate ones growing in whorls of three, or the top ones scattered, and borne on smooth, erect scapes, at times three feet high, the staminate flowers being uppermost. *Pedicels:* slender, smooth, with ovate bracts at their bases. *Calyx:* with three ovate, persistent sepals. *Corolla:* with three white, rounded and early falling petals. *Stamens:* numerous on the convex receptacle; filaments, pubescent, with a cobweb-like substance. *Pistils:* numerous. *Achenes:* forming a globose head. *Leaves:* from the base, lanceolate, or oblong-lanceolate; pointed at both ends and tapering at the base into a petiole sometimes two and a half or three feet high; parallel-veined, entire, glabrous.

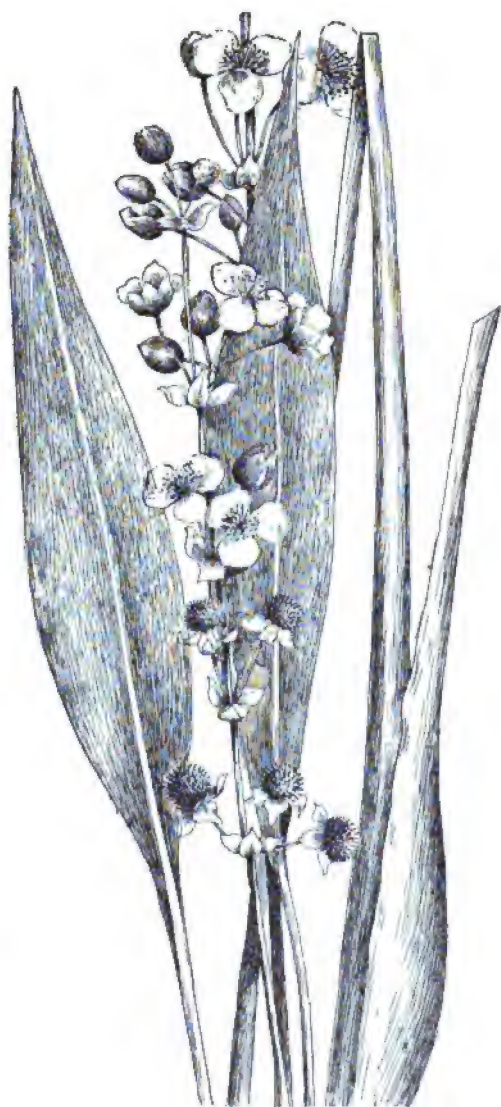


PLATE IX. LANCE-LEAVED SAGITTARIA. *Sagittaria lancifolia*.
(24)

Often we saw these most exquisite blossoms fairly transforming the swamps along the St. John's River into white masses as soft and fleecy as clouds. And there the plants grew to so great a size that the old story of carrying an axe about to chop down the southern flora was constantly in our minds. Many of the blossoms were fully an inch and a half across, and the petals displayed, as they unfolded, a daintily crinkled outline. So large were the leaves, and their great petiole so formidable that although we had bent the strength of an Amazon to taking up one of the plants, we had afterwards some doubt as to knowing what to do with it. Never before had we seen the species growing to such a size. It appeared calm and upright, placid even beside a slumbering alligator.

Although nowhere very common these water plants are readily known by their manner of growth and are among the most graceful of those that deck the muddy ditches or swamps.

S. longirostra, long-beaked arrow-head, which is so called from the stout beak which terminates the achenes, has a range extending from Alabama to Pennsylvania and New Jersey. Its sagittate leaves are noticeably broad, often measuring four and a half inches or more across their widest part. At their apices they are rounded to an abrupt point while the basal lobes are long and ovate-lanceolate in outline. The flowers closely resemble those of the preceding species. There is, however, no cobweb-like pubescence on their filaments.

S. latifolia, broad-leaved arrow-head, is perhaps the most generally distributed species that we have, and is mostly a gay inhabitant of ditches. It bears sagittate leaves, very variable, however, in shape and size. On the receptacle the numerous ovules are noticed to be arranged in a spiral fashion.

S. platyphylla, ovate-leaved sagittaria, inhabits places with shallow water from Mississippi and Texas to southern Missouri. Its leaves, which are generally ovate, occur also oblong and ovate-lanceolate and seldom measure more than six inches in length. In fruit, the fertile pedicels become reflexed.

S. Mohrii has its scape crowned with dainty flowers which appear to be less overshadowed with foliage than do many of the species, for in outline, the leaves are very slender, almost linear. It may be found growing about ponds and ditches in southern Alabama, where a few years ago it was discovered by Dr. Charles Mohr, and afterwards described and named for him by Mr. J. G. Smith.

S. subulata natans, arrow-grass, is a submerged plant with floating leaves, and a very different appearing one than the larger species which have already been mentioned. It is often fully grown and in bloom when but a few inches high, depending on the depth of the water, and at its best seldom attains over three feet. In either case, however, the amateur can readily

know from the arrangement of its flowers that it belongs to this genus. Its leaves are grass-like, mostly blunt at their apices and appear not dissimilar to many a little clump of grass which is seen about the brackish waters of Florida.



THE PALM FAMILY.

Palmæ.

A distinctive group, composed of trees and shrubs with a woody stem or caudex, as it is called, and fan-shaped or pinnately-divided foliage the growth of which is continued by means of a terminal bud. The flowers are very small and produced on a sort of spray, called a spadix.

Occurring through our range there are besides the native palms two exotic species which to many have become very familiar, the cocoanut, *Cocos nucifera* and the date palm, *Phoenix dactylifera*.

CABBAGE TREE, CABBAGE PALMETTO.

Sabal Palmetto.

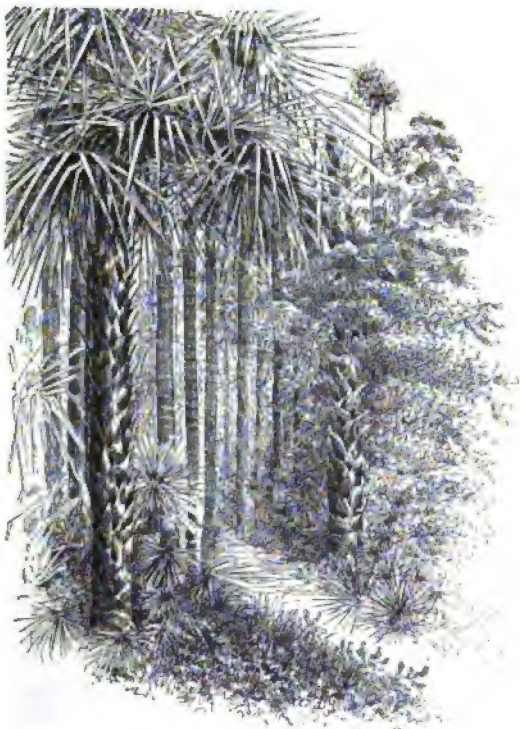
FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
<i>Palm.</i>	<i>Upright.</i>	20-40 feet.	Florida to North Carolina.	June. Fruit: Oct.

Stem: endogenous, erect. *Leaves*: from five to eight feet long, alternate; with long, smooth petioles which are sheathed at their bases with dry fibres; fan-shaped,

pinnatifid, the narrowed divisions deeply two cleft at their apices and recurved near the summit. *Sinuses*: with thread-like fibres which have parted from the pale margins; thick; lustrous; bright green. *Spadix*: two to two and a half feet long, branched. *Flowers*: whitish, perfect; very small; growing in the axils of early falling bracts. *Calyx*: cup-shaped; unequally three-lobed. *Petals*: three, slightly united at their bases. *Stamens*: six. *Drupe*: globose; black; lustrous.

"High-towering palms that part the southern flood,
With shadowy isles and continents of wood."

This majestic palm, with its tall trunk and luxuriously tufted mass of fan-shaped leaves at the summit, is very different in appearance from the trees with which we are mostly familiar. It is in truth a coastal beauty, and its presence changes completely the sylvan character of a scene from that of country where it is not known. To the people of its section its usefulness is very great. By the negroes and native whites alike, its terminal bud, which they call the "cabbage," is regarded as a great luxury. They think little indeed of sacrificing the tree when their appetites are in question; for always the growth of the young and healthful ones is chosen. When well



prepared this delicacy is similar in flavour to that of artichokes and is really extremely palatable. Even pickles are made from these buds. But more than in any other way the trees are pillaged to supply the bristles of scrubbing brushes. About a foot of the young, imbricated leaf stalks, the bud in reality, is cut off, and sent to factories that use them in large

quantities. To this suppression of its growth, the tree must in time naturally succumb. Its trunks are desirable for wharf-piles as they are not eaten by sea worms. Polished cross sections of the stem also are made into small ornamental table tops while canes as well are cut from the wood.

It is now a matter of history that on June 28th, 1776, a small force of less than a hundred Carolinians under command of Moultrie, repulsed successfully an attack of the British fleet commanded by Sir Peter Parker. They were on Sullivan's Island in the harbour of Charleston behind a primitive fortification made of palmetto trunks. Through this wood a ball can only pass with difficulty, its resistance being very like that of cork, and the perforation it makes in entering closes very shortly. Then the wood is not subject to splitting. This victory is commemorated by the state seal of South Carolina. An erect palm tree represents the strength of the fortification, while a prostrate oak typifies the British fleet of oak timber.

S. glabra, dwarf sabal, or swamp palmetto, bears from its short, buried stem very large, glaucous leaves. To their rounded bases the numerous narrow divisions nearly extend, while at their summits they are slightly two-cleft. Their margins are thick and divide but sparingly into threadlike filaments. The petioles are stout, triangular and rounded on the lower surface. Very abundantly the black, lustrous drupes are produced in their long clusters and each one contains a round, depressed seed. In woods of the lower districts, especially near Jacksonville, and occurring northward to the Carolinas it may be sought for among the palms.

SAW PALMETTO. SCRUB PALMETTO. (Plate X.)

Serenoa serrulata.

FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
Palm.	Spreading, dense.	3-4 feet.	Florida to South Carolina.	May, June. Fruit: Aug.

Stem: creeping, branching, shrubby. *Leaves*: large, their petioles with pointed saw-like teeth along their margins; circular; fan-shaped, square or wedge-shaped at the base and divided into numerous slightly two-cleft divisions, bright green. *Sinuses*: without filaments. *Spadix*: shorter than the leaves, densely tomentose. *Petals*: three, small. *Stamens*: six. *Drupe*: black; ovoid-oblong.

All through swampy places in its natural habitat, sometimes covering acres where grows the long leaved pine, or jostling side by side along sandy shores with tall grasses and wild flowers, this low and spreading palm is as distinctive a feature of the undergrowth as is the palmetto of arborescent-life. And on the Floridan keys where the landscape shows no mountains or ravines, no fast-flowing streams or graceful valleys, great clumps of it are tossed backwards by the breeze, or the leaves rest motionless in the humid air.

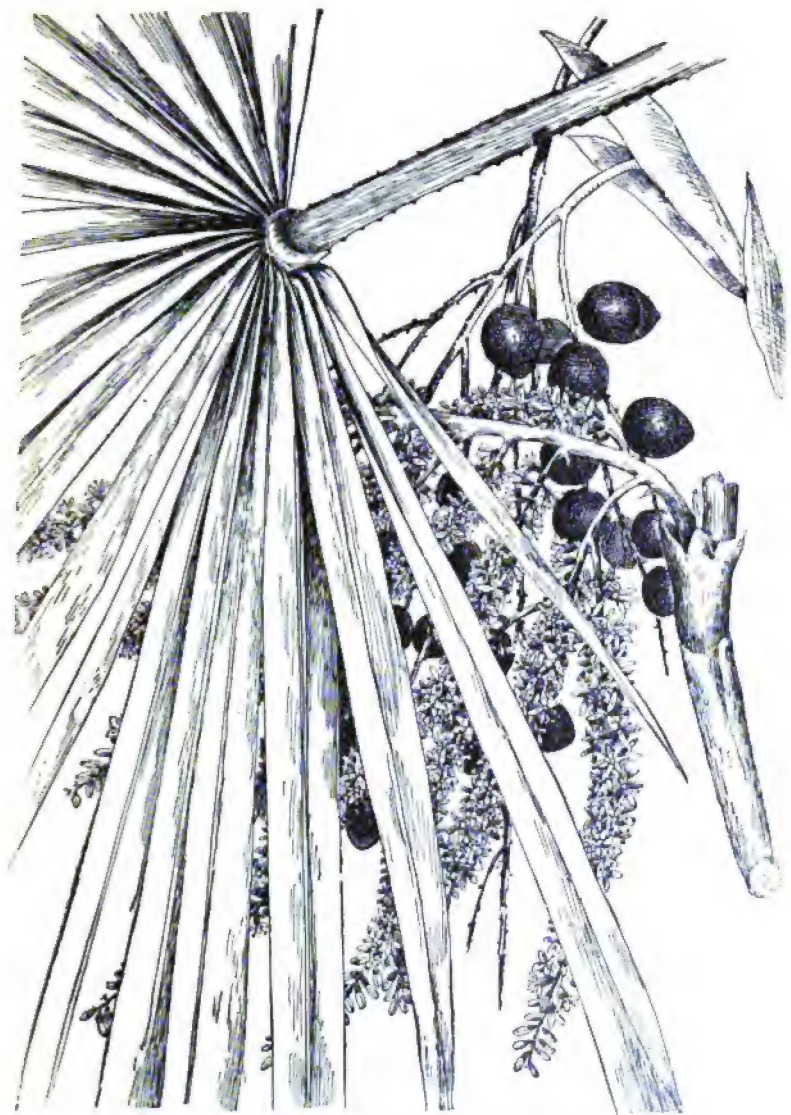


PLATE X. SAW PALMETTO. *Seroenoa serrulata*.
(29)

By the people its roots are appreciated, perhaps, more than its beauty, for they make them into brushes and weave their coarse, stiff fibre into sacking when they have washed out the softer tissues. Again they boil them down and drink the liquid as a medicine. The berries are considerably eaten, and besides being very tasteful they are said to be fattening.

S. arborescens thrives in the margins of swamps which, in southwestern Florida, follow the course of the Chockoloskee river. In habit it is arborescent, often becoming thirty and forty feet high, and producing one or more stems. Its flowers are minute. They and also the small fruit grow in a spadix considerably more elongated than that of the preceding species.

Oxeadoxa regia, the royal palm, appears to be one of nature's miracles as, at the great height of eighty or one hundred feet, its large leaves are seen moving ceaselessly in the air. Often they measure fifteen feet long and have a grace hardly conceivable by those who have not seen them. They are closely and pinnately divided into narrowly-linear segments which from their bases taper gradually to a pointed apex. Conspicuously veined, and of a dark, brilliant green it is the more noticeable that on their under sides they are covered with small, pale-coloured dots. In Florida, where for one place the royal palm grows about Rogue's River, the spadix opens its bloom in January and February. In fruit, it is even a more attractive sight as the violet blue berries are quite ornamental.

The wood of the trunk's interior is spongy and of no great value; but the outer rim is beautifully marked and made extensively into the canes which tourists buy as souvenirs.

Pseudophoenix Sargentii is the name of the rare palm which is found at the east end of Elliott's key, and also on Key Largo, Florida, and about which Mr. Curtis has written: "On account of the small number of these trees and the precarious condition under which they grow, they might have disappeared wholly from the world but for their timely discovery by Professor Sargent." They are usually from twenty to twenty-five feet high with large, erect leaves which are abruptly pinnatifid. The spadix is often quite three feet long and bears very showy fruit.

Thrinax Floridana at its best grows to a height of about thirty feet, and its trunk, with bluish grey covering, is generally decorated with the persistent bases of the petioles. The nearly circular leaves are bright yellow-green, shiny above and on the lower side silvery white. The tips of the petioles are orange coloured while the lower down become thick and tomentose. By the long, branching spadix ivory-white and fragrant flowers are abundantly produced. They come forth in June although the tree sometimes blossoms again in October or November. About six months later the fruit ripens. The plant grows on sandy shores and coral ridges and has

been reported from Cape Romano to Cape Sabal and from Torch Key to Long Key.

T. microcarpa, silver-top palmetto, or brittle thatch, is of similar size to the preceding tree and is more frequently seen than any other palm on the keys of south Florida. It there inhabits dry, coral soil. Its great leaves, with their quadrangular petioles with rounded edges, are from two to three feet across and are covered underneath, at least when young, with a bluish white tomentum. Above they are pale green. To below their middle they are split into narrow divisions considerably thickened at their margins. In April the spadix gracefully spreads its bloom. The fruit, the size of which has suggested the tree's specific name, ripens in the late autumn or early winter. It is round and projects a short remnant of the style. From the trees' trunks, which are covered with a pale blue rind, wharf piles are obtained, while its thick, coriaceous leaves thatch many a humble roof. They are also made into a coarse sort of rope.

Coccothrinax jucunda, also an inhabitant of dry, coral ridges, occurs along the shores of Bay Biscayne and on the southern Keys of Florida. It becomes a tree of from fifteen to twenty-five feet high. Its large nearly circular leaves are lightly tinted on the margins, lustrous above, either pale blue or yellowish green, while underneath they are silvery white. The spadix attains in flower a length often of two feet, and the tree is then, as when in fruit and at all times, a splendid sight. Its seeds are brown or of a tawny colour.

C. Garberi appears to be a diminutive representation of the above and grows on coral ridges near the shores of Bay Biscayne. It is a stemless plant, delicate in growth and extremely pretty. The segments of the comparatively small leaves are about one half an inch broad and divided to their bases. Much of the charm of the plant lies in the silvery satin-like texture of the undersides of its foliage.

BLUE PALMETTO.

Rhaphidophyllum Hystrix.

FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
Palm.	Shrubby.	3-6 feet.	Florida to South Carolina.	June, July.

Stem: short, two to three feet long, creeping or upright. *Leaves:* orbicular, fan-shaped with triangular petioles, rough on their edges, and persistent net-like sheaths, the numerous divisions two to four toothed at their apices, slightly glaucous. *Spaethes:* two-lipped, woolly. *Spadix:* from six inches to one foot long, short peduncled. *Petals:* yellowish, ovoid.

Through its range many natives know this palm and familiarly speak of it as the blue palmetto. Perhaps it is more a sensibility than anything else which makes them realise that it is different from others of the genus, for few, it is safe to say, know its botanical peculiarities.

THE ARUM FAMILY.

Araceæ.

Herbs which usually contain an acrid, watery juice and bear their flowers closely on a spadix usually wrapped about by a spathe. Spadix densely flowered; the flowers either perfect, monœcious or diœcious. When both sorts of flowers occur in the same spike the pistillate ones are arranged below the staminate ones. The long petioled leaves, either simple or compound, are both netted and parallel veined. Rootstock: a corm or tuber.

"I don't keer nuthin' 'bout yarbs," said an old mountaineer, "but when I sees one, I kin tell whar it be." Perhaps we should all be so fortunate if the various plant families helped us along as well as do the arums. The golden-club, *Orontium aquaticum*, is looked upon quite as an exception to the family custom as it has no screen for its domesticity, that is, excepting in very early days when a spathe does enclose and protect from harm the young spadix. Soon, however, it falls away, or remains as a sheathing bract at the base. At maturity traces of it are seldom seen. The golden club, however, belongs to a monotypic genus, and little doubt as to its identity can enter the mind when its simple spadix is seen, crowded with small golden flowers, and its oblong, pointed leaves, which either float on the water, or occasionally protrude. It occurs mostly near the coast from Louisiana and Florida to Massachusetts, ascending as high as 2,200 feet in the mountains of West North Carolina.

The skunk cabbage, *Spathyema fétida*, also a celebrated individual, is much lauded, in spite of its unattractiveness, for being one of the earliest spring bloomers. Instead, however, of regarding it as leader of the gay spring pageant, we might with justice look upon it as a winter visitor, for it usually pushes itself through the soil in February. Then down in the swamps its great mottled, purplish brown and yellow cowl is well known. At an early day insects find it out, and that their coming is expected is proved by the webs which spiders weave within the hoods. It is not unusual to tear them asunder when opening the spathes. Later than the flowers the leaves appear; sometimes they reach three feet in length, and grow in great tufted crowns. From a distance they appear to have carpeted the marshy ground with apple-green.

Peltandra sagittifolia, white arrow-arum, is an inhabitant of wet places and occurs from Florida to Southern Virginia. Its white spathe, three or four inches long, is open or expanded towards the summit where it tapers

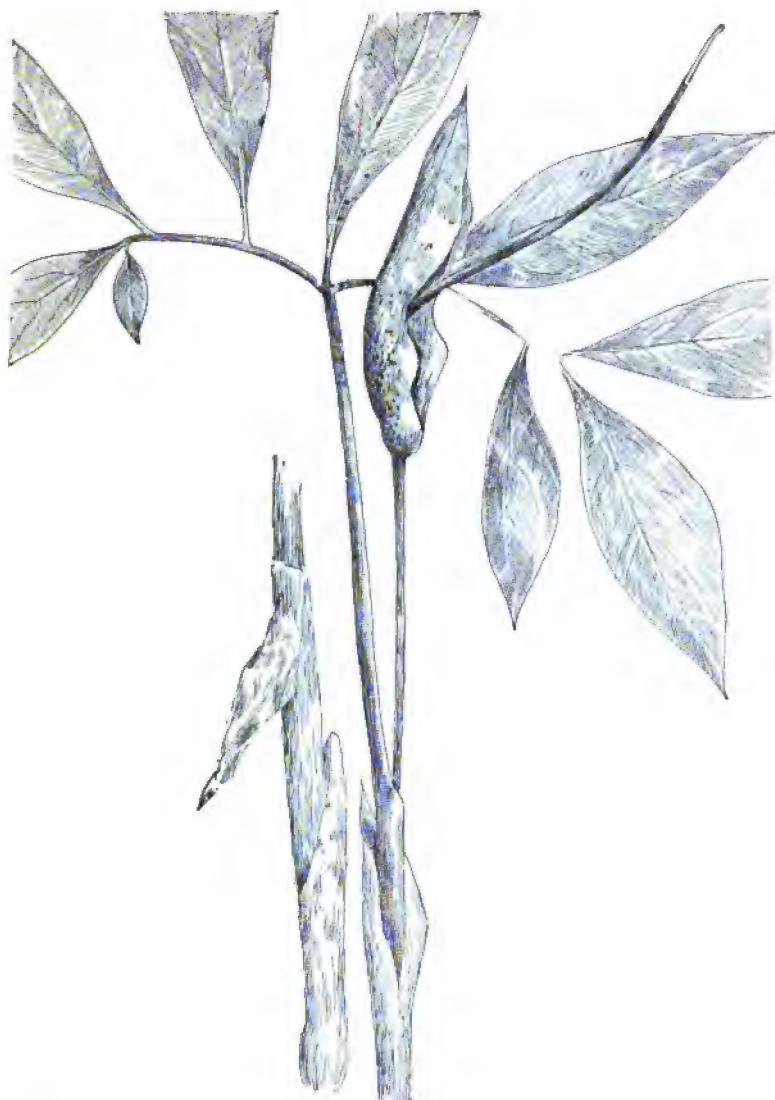


PLATE XI. GREEN DRAGON. *Arisaema Dracontium*.
(33)

to a point. The spadix is much shorter. The leaves are sagittate, quite broad, with basal lobes that diverge widely. But a glance at this humble plant is enough to recall its relatives, the cultivated calla lily and the quaint water arum, *Calla palustris*, of, however, a more northern range.

P. Virginica, green arrow-arum, another bog herb, has sagittate leaves which, however, are much narrower than those of the preceding species. The spathe also is very distinctive, being green, long, and very closely wrapped about the whole length of the shorter spadix. Its margins are strongly undulated. Even when ripe the berries are a decided green. The plant is not at all local in its range, but occurs at various points from Louisiana and Florida to Maine.

GREEN DRAGON. DRAGON-ROOT. (Plate XI.)

Arisæma Dracontium.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Arum.	Spathe: green or whitish.	Scentless.	Texas and Fla. to Maine and westward.	April-June.

Flowers: minute, yellowish, growing at the base of a spadix which extends into a slender appendage sometimes seven inches long and greatly extended beyond the spathe. *Spathe*: convolute, greenish, opening to the base, the lid being pointed and upright. *Fruit*: an ovoid bunch of orange-red berries. *Leaves*: solitary, long petioled, extending high above the flowers; pedately divided into many obovate or oblanceolate leaflets, pointed at the apex and sessile or extending into short, margined petiolules; entire; thin; smooth. *Scapes*: sheathed at the base with silvery, membranous scales. *Corms*: clustered.

This very odd-looking plant which is not, however, rare along streams or in moist woods, is a near relative of Jack-in-the-pulpit, *Arisæma triphyllum*, an individual too familiarly known to need any introduction. Besides the dissimilarity in their leaves, for it will be remembered that the preacher bears two leaves of three leaflets each which tower above his head, it is interesting to regard separately their spadixes. That of Jack-in-the-pulpit is so short that the top of the spathe could easily close down over it, while that of the green dragon extends outward, as can be seen by the illustration, to a great length. Even the flowers of the staminate plants, which are higher on the spadix than those of the pistillate ones, never appear above the part enwrapped by the spathe, so the rest of it must be purely for the purpose of attracting attention. The leaves which are grotesquely formed are said to kindle a vivid imagination into seeing the claws and foot of a dragon, while "fiercely acrid" has been the term applied to the corms' juices.

A. quinatum, still of this group, is a large, bold-looking plant with either one or two leaves which are divided into from three to five large oval, or elliptical, leaflets. Its spadix does not protrude above the spathe which often measures seven inches long. The plant grows in the mountains of Georgia and extends to North Carolina.



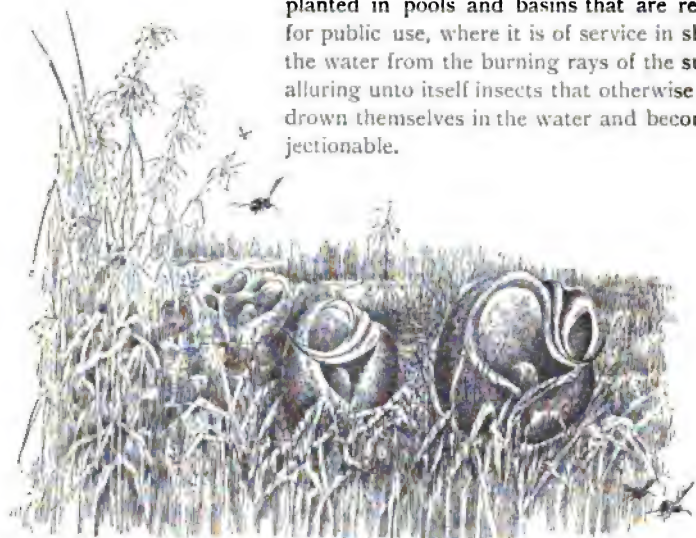
PLATE XII. WATER LETTUCE. *Pistia spathulata*.
(35)

WATER LETTUCE. TROPICAL DUCKWEED. (*Plate XII.*)*Pistia spathulata.*

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Arum.	Spathe : white.	Scentless.	Florida and westward.	August.

Flowers : monœcious; very small; few. *Spadix* : axillary at the base of the leaves and enwrapped by a white, tubular spathe, which is spreading and pointed at the apex and united at the base; the outer side covered with downy hairs. *Leaves* : one to five inches long, growing in a circle on the water; obovate, broadly rounded at the apex and contracted at the base; entire; pale green; parallel-veined; soft and covered with a powdery down. *Roots* : long; feathery; floating.

This little plant of tender green floats freely in the rivers and ponds of many tropical regions, and appears like a young, unsophisticated head of lettuce. And particularly meek it looks when on the St. John's river it is being knocked about by the all powerful water-hyacinth. During the summer and autumn it remains fresh and its growth is especially luxurious in such shallow water that its fibrous roots can touch the soil below and thus draw on an added amount of nourishment. In suitable climates it is planted in pools and basins that are reserved for public use, where it is of service in shading the water from the burning rays of the sun and alluring unto itself insects that otherwise would drown themselves in the water and become objectionable.

*The Skunk Cabbage.*

THE PINE-APPLE FAMILY.

Bromeliaceæ.

Chiefly herbs with fibrous roots, growing on other plants but not parasitic, and which bear elongated, entire or spinulose leaves, covered mostly with a greyish scurf; and perfect, bracted flowers which are either solitary or panicked. Perianth in two distinct sets; three sepals and three petals.

LONG MOSS. FLORIDA MOSS. AIR PLANT.

Tillandsia usneoides.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Pine apple.</i>	<i>Yellowish or green.</i>	<i>Scentless.</i>	<i>Florida to Virginia.</i>	<i>June-October.</i>

Flowers: regular, perfect, solitary or rarely two and sessile in the axils of the leaves, with bracts at their bases. *Perianth:* with three slender, greenish sepals and three yellow petals. *Stamens:* six, on the receptacle, or the three inner ones inserted on the base of the petals. *Stigmas:* three. *Capsule:* linear; three-valved. *Leaves:* scattered, or two-ranked; thread-like; linear-cuneate, elongated and covered densely, as are the stems with a silvery grey scurf. *Stem:* one to two feet long, slender; branching; flexuous; hanging in clusters from the branches of trees.

Who of the south does not know the long moss as it hangs in great streamers from the branches of trees and gives to them a hoary look as of great age. Many there are who admire it extravagantly and complain of the nakedness of a scene where it does not grow; but others are conscious of a certain weird melancholy it casts abroad as it waves in its pendulous masses. Especially did this sensation seem to me prevalent along the shores of the rivers in Florida, where it forms one of the principal features of the vegetation. That the long moss is so wonderfully abundant is because its peculiar little seeds have long threads about their crown which, when they are cast about by the breezes, catch hold of the trees and cling to them until they germinate.

The people gather this moss and, by a known process of rotting its outside, produce of the inner fibre a stuffing which is largely sold for use in furniture. Indeed this industry has helped a good many natives in the way of securing money. It is only about fourteen years ago that in Dade County, where now stands the famous Palm Beach hotel there were but sixty voters, the area of the County being, however, little less than that of the state of New Jersey. One coloured church there was, where once a year the priest came to announce pardon for their sins. It was very hard to

gain a livelihood. In fact, had it not been for the cabbage palmetto, the tilandsias and the game the Seminole Indians brought in their canoes and exchanged for silver money, the people would have starved. Besides the long moss and the two species that follow there are about ten others occurring in the United States and over 300 which are indigenous to tropical America. Many of the more attractive ones are used as decorative plants in greenhouses where they are hung up on wire nets. One man from Dade County used to collect such as these, take them up to Jacksonville and from there ship them by the cargo.



T. caspitosa, a hoary plant, bears few-flowered spikes with terminal flowers, the blue petals of which are considerably longer than their conspicuous bracts. On the trunks of trees it grows in great, rounded clusters.

T. Bartrdmii, as the preceding species, has linear, scurfy leaves which are dilated at their bases. They are erect and rigid and about as long as the stem. Towards their summits they become bristle-like. The petals of the flowers are blue.



THE SPIDERWORT FAMILY.

Commelinàcæ.

Herbs with regular, or irregular and perfect flowers which grow in cymes, and are usually subtended by leafy or spathe-like open bracts.

VIRGINIA DAY-FLOWER. (Plate XIII.)

Commelina Virginica.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Spiderwort.	Blue.	Scentless.	Texas and Florida to New York.	June-September.

Flowers : showy ; irregular ; growing in sessile cymes and subtended by a spathe-like bract. *Sepals* : three, unequal in size. *Petals* : three, two of which are large, while the third one is more inconspicuous. *Stamens* : usually six, three being imperfect. *Capsule* : three-celled, each cell containing a single seed, although one cell does not open to allow of its escape. *Leaves* : simple ; alternate ; lan-



PLATE XIII. VIRGINIA DAY-FLOWER. *Commelina Virginica*.
(39)

ceolate or linear-lanceolate; entire; parallel-veined; rough; the petiole forming about the stem a united, inflated sheath which is pubescent and fringed at the opening. *Stem*: ascending; branching; leafy. *Juice*: mucilaginous.

To distinguish the various species of day-flowers is not always a simple matter, for between some of them the only well-marked difference is to be found in the capsules. Patience, therefore, and a good lens are necessary.

The genus, as has been often told, was named by Linnæus in commemoration of Kaspar Commelin and his two brothers who were Dutch botanists. The third brother, being less scientific and earnest than the other two, is said to be represented by the dwarfed and obscure petal of the flower, while the large, showy petals equally typify the renown of the two better students.

C. erecta, slender day-flower, is a species which very closely resembles the preceding one. Usually, however, it is much more slender in its manner of growth and its stems are commonly tufted. But should these two characteristics not be constant a sure way of identifying this form is by its capsules, all the three cells of which open to release their seeds.

C. hirtella, bearded day-flower, on the contrary, is a readily known species, it being large, from two to four feet high, and having lanceolate leaves sometimes as much as eight inches long. The sheaths at the bases of the petioles are bearded with noticeably long brownish hairs, a fact referred to in the plant's common name. When rubbed downward, also, the upper surfaces of the leaves are found to be very rough. The plant most often grows in shaded, moist soil.

MOUNTAIN SPIDERWORT.

Tradescantia montana.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Spiderwort.	Blue.	Scentless.	Georgia to Virginia.	June-August.

Flowers: showy; regular; growing in terminal umbels and subtended by long, leaf-like bracts; their pedicels reflexed until in flower. *Sepals*: three; distinct; oval or lanceolate. *Petals*: three; sessile; ovate or orbicular. *Stamens*: six, with bearded filaments; fertile. *Leaves*: lanceolate; long pointed at the apex and forming at the base a closed sheath about the stem which at its opening is hairy; parallel-veined; entire, smooth. *Stem*: one to two feet high; slender; seldom branched. *Juice*: mucilaginous.

Through well shaded spots in moist woods, the dense clumps of this plant's grass-like foliage are very sturdy and vigorous looking. Its flowers too have a cheerful air and are usually the only flecks of blue in sight, the colour being not nearly so well represented among our wild flowers as are several others.

The genus was named for John Tradescant, a gardener of Charles I., who was no less known as a botanist and great traveller.

T. rosea, roseate spiderwort, a delicate species with purplish pink flowers

and very slender, elongated leaves, occurs in dry woods from Texas and Florida to Maryland. Its thread-like pedicels are mostly erect, even when in bud. Another noticeable feature is the umbel's long peduncle which is subtended by a dry looking bract.

T. Virginiana, spiderwort, has again a sessile umbel which is subtended by long, leaf-like bracts. Often the pedicels of the large, showy flowers are covered with pubescence while at times they are found to be glabrous. The plant grows in moist soil from Kentucky to New York, and has long been a favourite in cultivation.

T. reflexa only erects the smooth pedicels of its umbels when the flowers are in bloom. Its leaves are very long, glaucous and grass-like. Through the south it grows and is sometimes in blow as early as May.



THE PICKEREL-WEED FAMILY.

Pontederiacæ.

Including in our species water plants with blue, irregular and perfect flowers growing either solitary or in a spike subtended by a leaf-like spathe ; and having petioled leaves which are paralleled veined.

PICKEREL-WEED.

Pontederia cordata.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Pickerel-weed.</i>	<i>Purplish blue.</i>	<i>Unpleasant.</i>	<i>Texas and Florida northward.</i>	<i>June-October.</i>

Flowers : growing closely in a terminal spike ; the pubescent peduncle with a bract-like, green spathe at its base. *Perianth* : labiate, the upper lip, three lobed and marked with yellow, the lower one with three linear, spreading lobes. *Stamens* : six, the lower ones in the tube of the perianth ; the three upper ones shorter and often imperfect. *Pistil* : one. *Leaves* : cordate, or broadly sagittate, blunt at the apex, deeply cordate at the base or projected into two rounded lobes, the petioles sheathing the stem ; entire ; wavy on the margins ; smooth. *Stem* : stout ; erect ; rising one to two feet above the water.

When a glimmer from this gay plant attracts the eye there is something very pleasing in its erect spike of rakish-looking flowers. Very placidly its colour appears to blend with the silvery sheen of the water above which it arises, and especially is this noticeable in the late summer when often the flowers form so striking a contrast to the brilliant cardinal flowers blooming by the water's edge and the glow from the masses of yellow ones not far distant. Many of these plants are usually seen together, so a pageant of bloom continues for a considerable time. The individuals, however, be-

come sadly faded when they have lived but a single day. The flowers show the peculiarity of being trimorphous quite as strongly as do those of *Lythrum Salicaria*.

WATER-HYACINTH. (Plate XIV.)

Piarópus crássipes.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Pickeral-weed.</i>	<i>Pinkish lavender.</i>	<i>Scentless.</i>	<i>St. John's River, Fla., etc.</i>	<i>April-October.</i>

Flowers: growing closely in an oblong spike at the end of a short, pubescent peduncle, and having a sheathing bract at the base. *Perianth*: labiate, the upper lip three divided, the middle lobe broader than the other and marked with turquoise and sapphire blue, and having a deep yellow spot in the centre; the lower lip also three divided and spreading. *Stamens*: six, the three lower ones in the throat with long, hairy filaments and up-curved anthers; the three upper ones very short and often imperfect. *Pistil*: one. *Leaves*: floating by means of enlarged petioles in a rosette on the surface of the water (the petioles swollen at their bases, and filled as bladders with air) broadly orbicular, often with a short, abrupt point at the apex; entire; somewhat rough on the upper surface; fleshy. *Roots*: occasionally two feet long; fibrous; bushy; floating or attached to the ground in shallow water.

In rounded, floating clumps, like green mats on the surface of the water we first saw this remarkable plant; for the river at this point was broad, and they were bits that had broken away from their moorings and were drifting wherever the wind directed them, being well upheld by the air in their inflated petioles. But as we came to narrower stretches of the river we saw them growing along the shores in unbroken lines by the acres. Everywhere the eye rested upon them. And far into the marshy land they extended. Many of the plants were still in bloom and carpeted the calm water with a soft tint of pinkish lavender. Their extreme beauty cannot be gainsaid nor that it adds a wonderful light to the St. John's.

About twelve years ago, Mr. Fuller, who lived along the river near Palatka, imported this plant from India and had it growing in a lake on his grounds. Here it increased so rapidly that to rid himself of a superabundance of it he threw a number of plants into the river. At that time there was not one of them growing on its surface, but there were many white water lilies. No sooner, however, had the hyacinths felt the warmth of this humid stream, than they recognised its peculiar character as being well adapted to their needs and here they have established their kingdom. In the shallow water their fibrous roots delve in the ground, and form an anchorage. Then so close and interwoven is their growth that they stretch outward in floaty masses, which gradually become detached and are drifted hither and thither. From St. Francis to Lake George, a distance of twenty-five miles, they at one time blocked the river and greatly impeded navigation. They are also a nuisance in upholding objectionable organic matter,

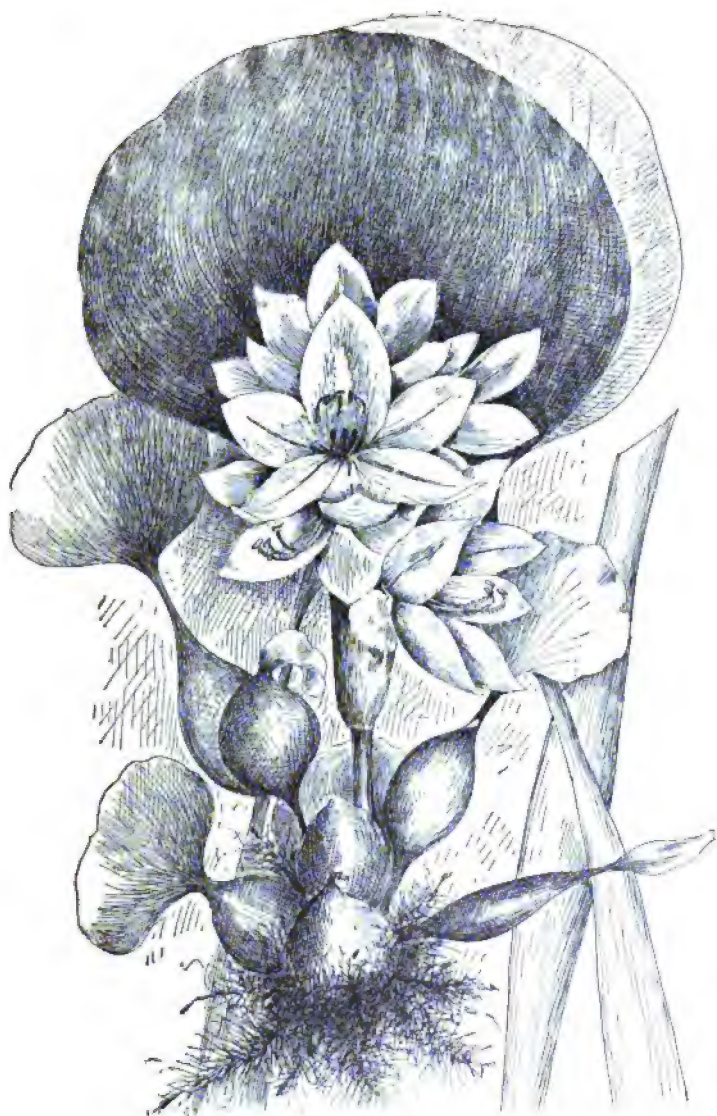


PLATE XIV. WATER-HYACINTH. *Piaropus crassipes*.
(43)

Moreover, they destroy bridges and docks and at the present time have more anathemas showered upon them than any other plant in Florida, or perhaps in the country. So serious, indeed is their rapidly increasing power that the department of agriculture at Washington is perplexed about the best means to employ in their destruction. At the present time what has wreaked more damage on them than anything else are the heavy rainfalls to which Florida has been subjected and which have caused the river to rise greatly. High gales have then floated them into the adjoining woods, where, when the water fell, they have been left to die being entangled among other growth, and where in decaying they richly fertilise the soil.

Among other good qualities, they are highly nourishing food for horses, crows, pigs and cattle. Often we saw the latter standing in water which left little more than the line of their back showing and placidly eating the stalks and leaves. These have a peppery taste and are said to be very fattening to stock. The bloom also is very beautiful.



THE STEMONA FAMILY.

Stemondcea.

CROOMIA.

Croomia pauciflora.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Stemona.</i>	<i>Greenish.</i>	<i>Scentless.</i>	<i>Fla., Ga. and Ala.</i>	<i>April.</i>

Flowers: small; nodding; growing on slender, jointed pedicels from the axils of the leaves. *Perianth:* persistent; four-parted; the divisions oval. *Stamens:* four, on the receptacle opposite the lobes. *Stigma:* two-lobed. *Leaves:* alternate about the summit of the stem; oblong-cordate; mostly seven nerved; entire; thin; glabrous; becoming tissue-like when dried. *Stem:* six to twelve inches high, ascending from a creeping rootstock, sheathed at the base.

At one time this low and insignificant-looking herb was much talked of in the south, and it still claims a good deal more than an ordinary amount of attention. When first it was discovered the leading botanists of the country were greatly puzzled to know just where to place it in the great world of plants; and finally it was made to stand as the type of a new genus. It was discovered by, and named for one of the oldest and best known botanists of the south, Mr. Stephen Croom, whose love for flowers was so enthusiastic that he was able to interest Dr. Chapman in the science, who first took it up as a pastime. It seems to have been a melancholy fate that Dr. Croome and his family should all perish while on the Atlantic, and, therefore, it is particularly pleasant to find this little plant still blooming in his honour.



PLATE XV. WATER HYACINTHS ON THE ST. JOHN'S RIVER.

*Each curve of the river,
Each broad, open bay,
Is lined with these florets,
Proclaiming the way.
(xv).*

THE BUNCH-FLOWER FAMILY.

Melanthaceæ.

Including in our species leafy stemmed herbs which arise from root-stocks, or less often from bulbs. Their leaves are linear, or broader, parallel-veined and entire. Flowers: perfect; regular; growing in various forms of inflorescence, and having a perianth of six usually separate segments. Fruit: a capsule.

TOFIELDIA.

Tofieldia glabra.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Bunch-flower.	White.	Scentless.	North and South Carolina.	October.

Flowers: small; expanding from the base upward in a raceme at the end of a scape-like stem; the pedicels having minute bracts at their bases. Perianth: with six oblong rounded segments; withering and persisting for some time. Stamens: six; exserted; filaments, thread-like. Pistil: one. Basal leaves: clustered and sheathing the base; the few on the stem sessile; linear; pointed at the apex. Stem: one to two feet high; simple; smooth.

In low pine barrens or where there is sandy soil this plant is seen rearing its light, fluffy looking cluster of bloom. While it does not much matter to botanists that the genus has no very pertinent common name, the fact is significant of how little known to the people are its fair members. *Tofieldia palustris*, which, however, does not occur through our range is called the Scottish asphodel.

T. glutinosa, glutinous tofieldia, grows in swamps and bogs and besides being an inhabitant of the extreme north and west occurs also in the southern Alleghanies, where it chooses often such high peaks as that of Mount Pisgah for its habitation. Its stem and pedicels are very viscid and covered with black glands which give the plant a rather disagreeable appearance. From the beginning of May it blooms through July.

TURKEY-BEARD.

Zerophyllum asphodeloides.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Bunch-flower.	White.	Scentless.	Georgia and Tennessee to southern New Jersey.	May-July.

Flowers: growing compactly in a long, terminal raceme, with thread-like pedicels. Perianth: with six ovate or oblong spreading segments; withering-persistent. Stamens: rather short; the filaments subulate. Styles: three; stigmatic along the inner side, thread-like, reflexed. Leaves: those about the base thickly clustered; those on the stem narrowly linear; spreading; very long; rough and

file-like on the margins; the upper ones considerably shorter than the others. *Stem*: two to five feet high; erect; simple; very leafy and arising from a woody rootstock.

Before one can fairly reach the top of Grandfather Mountain and rest for awhile upon the chin of that dark visage against the sky, he must fairly tread underfoot many of these plants which, in sandy places, grow luxuriantly and are among the most beautiful of the herbaceous ones there seen. In the early spring the plant's thick clumps of semi-evergreen basal leaves, and later its packed spike of white flowers could hardly escape the attention. When we ascended the mountain, however, its great head of capsules was ripening; the dense bloom having long since passed.

SWAMP PINK.

Heloniopsis bulbata.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Bunch-flower.</i>	<i>Purple.</i>	<i>Scentless.</i>	<i>Va. to Penn., N. J. and N. Y.</i>	<i>April, May.</i>

Flowers: perfect; growing in a short, dense raceme at the end of a tall scape which bears several lanceolate, bract-like leaves near the base. *Perianth*: with six, spatulate, spreading segments. *Stamens*: six, their filaments filiform; exserted. *Authers*: blue. *Pistil*: one; stigma, three-branched. *Leaves*: six to fifteen inches long, clustered at the base of the scape; long oval, pointed or rounded at the apex and tapering at the base into the petiole; entire; smooth; thin; the basal ones evergreen.

When the bloom of this plant is bright and fresh its leaves are from five to eight inches long, and they then hover about the base in a very pretty rosette. They have also, being evergreen, protected the young buds, which when the winter is mild, become impatient and often shoot up as tender morsels for the frost to nip. After the flowers have passed, however, these leaves attend to their own growing and often attain an astonishing height. The swamp pink grows on many of the high mountains of the Alleghanies. On Grandfather Mountain and near Cæsar's Head I noticed a number thriving well in rather moist soil. Formerly, I had thought the plant to be an exclusive inhabitant of swamps and bogs, as it mostly is in New Jersey.

DEVIL'S BIT. UNICORN-ROOT. DROOPING STARWORT.

Chamaelirium luteum.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Bunch-flower.</i>	<i>White.</i>	<i>Scentless.</i>	<i>Fla. to Mass. and westward.</i>	<i>May-July.</i>

Flowers: small; bractless; diœcious; growing in long, spike-like and often curved racemes. *Perianth*: with six spatulate-linear, one-nerved segments. *Stamens*: six. *Pistillate flowers*: with three styled pistils. *Capsule*: oblong; three-lobed; projecting the club-shaped styles. *Leaves*: those from the base, long obovate, blunt at the apex and tapered at the base into long petioles; those of the stem linear, or lanceolate; sessile; smooth. *Stem*: erect; glabrous; those of the pistillate plants often four feet high, considerably taller in fact than the staminate ones. *Rootstock*: tuberous; bitter.

This graceful plant which is monotypic of its genus forms often a thick, close growth through moist meadows. In the high Alleghanies it is very abundant. It fact, in many of the mountain-fastnesses, where the whole poetry of life devolves into a struggle for existence, it is of much importance to the people. They gather just as much of it as they can, and fairly sell it by the ton. It is in the greatest demand, forming, it is said, a strong ingredient in one of the celebrated Mrs. Pinkham's remedies. If actively inclined, a man employed in pulling the plant can earn from seventy-five cents to a dollar a day. Even young girls gather enough to net them readily from thirty-five to fifty cents. But the natives themselves do not further fatten Mrs. Pinkham's profits. When they are in need of a restorative they simply make a tincture out of it with whiskey which they then drink in rather astonishing quantities.

Although called popularly blazing star the name is inappropriate, being more often associated with another genus. Its scientific name was formerly *Helonias dioica*, a title to which the mountaineer still clings.

STOUT STENANTHIUM.

Stenanthium robustum.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Bunch-flower.	White and greenish.	Sweet.	Tenn. and S. C. to Penn.	June-September.

Flowers: small; growing in a long, loose panicle. *Perianth*: with six lanceolate, pointed segments. *Stamens*: very short. *Capsule*: erect; flattened; three-valved. *Leaves*: those from the base, often more than a foot long; linear; blunt at the apex and sheathing the stem at the base; those of the stem, sessile; linear; pointed; becoming bract-like among the flowers; smooth. *Stem*: three to five feet high; erect; stout; arising from a bulb.

In late August, when there is a lull in the procession of wild flowers, this tall plant arises and spreads its fleecy panicle of bloom. There is much about it that is beautiful, especially its fresh, crisp look. In the Alleghanies it grows on high places. At Highlands, N. C., where I found a notably fine specimen, it clung to a rocky ridge bordering the lake; and I also saw that it was there cultivated by the inhabitants and thrived extremely well.

S. gramineum, grass-leaved stenanthium, differs from the preceding species, in having, as its name implies, very slender, grass-like leaves and bearing a capsule which is reflexed. The plant, moreover, does not grow so tall as the "stout" one, and is more delicate in appearance, the branches of the panicle being very slender and often drooping. Its flowers are perhaps smaller, but they are extremely pretty. On their undersides they are tipped with a deep wine colour, and are laden with a sweet perfume. The plant grows in either moist or rather dry soil from Virginia to Kentucky and Alabama. In the high Alleghanies it is a constant bloomer through August and September.

CRISPED BUNCH-FLOWER.

Melanthium latifolium.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Bunch-flower.</i>	<i>Yellowish or greenish white.</i>	<i>Fragrant.</i>	<i>South Carolina to Pennsylvania and Connecticut.</i>	<i>July, August.</i>

Flowers: growing in a terminal panicle, their pedicels slender and with lanceolate bracts at their bases. *Perianth:* with six rounded or ovate segments, crisped on their margins and considerably narrowed into claws at the bases where there are minute glands. *Stamens:* shorter than the petals. *Capsule:* large; three-valved, each one of which is tipped at the apex; the petals being persistent about the base. *Leaves:* clasping at the base of the stem; oblanceolate, eighteen inches to two feet long, sessile; pointed and much smaller near the summit of the stem; smooth. *Stem:* two to four feet high; stout; erect; somewhat grooved; pubescent.

In travelling through the Alleghanies, those sections most noted for their wealth of vegetation, I came many times across this tall plant; for in spite of its being so wholly green it was successful in attracting the eye, either from the swinging black Maria used as a diligence through the mountains, or from the windows of the more conventional railway train. It inhabited there the dry woods which extended close to the road side. Naturally it is a great, coarse plant, but when observed closely there is something of interest in the crimping of its petals and in the way they persistently cling to the bases of the forming capsules.

M. Virginicum, bunch-flower, grows in wet meadows and marshes over an extended range and is similar to the crisped bunch-flower in general characteristics. Its leaves, however, often grow as long as eighteen inches. They are linear, and about the edges of its oblong perianth segments there is no crisping. The plant is simply plain Mary with no trimmings.

M. parviflorum, small flowered melanthium, the *Veratrum parviflorum* of Michaux, bears oval, or oblanceolate leaves which are quite distinctive enough to mark the species. Often they are three and a half or four inches wide and about eight inches long. At their apices they are short-pointed and taper at the bases into sheathing petioles. The flowers are small, greenish and unattractive; their segments being oblanceolate and without glands at the bases of their short claws. The specimen that came under my notice grew in rich soil on the upper slope of Mount Mitchell, N. C. The plant's range, however, extends from South Carolina to Virginia.

LARGE FLOWERED BELLWORT.

Uvularia grandiflora.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Bunch-flower.</i>	<i>Lemon-yellow.</i>	<i>Scentless.</i>	<i>Georgia and Tennessee northward to Quebec.</i>	<i>April-June.</i>

Flowers: one to one and a half inches long, solitary and drooping from slender

peduncles; companulate; with six linear-lanceolate spreading segments, pointed at the apex and narrowed at the base where there are nectar bearing glands. *Stamens*: six, included; the filaments thread-like. *Leaves*: alternate; oblong; perfoliate; pointed at the apices; thin; pubescent on their under surfaces, at least when young. *Stem*: erect; forked at the summit; leafy above; there being occasionally one leaf, however, borne under the forks, and below which are scale-like bracts.

About the bellworts there is ever to be noticed a certain graceful bearing peculiarly their own. To a great extent the Solomon's seals have the same air, but much more frequently we notice that, as the larkspur, plants are dignified in aspect, or that they portray other marked traits. Through the rich woods when well located, the bellwort spreads very rapidly, and bears abundantly although in a modest fashion its quaint pale yellow bells. In cultivation the genus is very desirable.

U. perfoliata, perfoliate bellwort, produces pale yellow flowers which have narrow segments somewhat glandular within. They are also fragrant. Below the forked branches are usually from one to three oblong or broadly-lanceolate leaves which clasp about the stem so closely that they appear to have been pierced by it. They are a soft, pale green, covered with a powdery bloom and attain at maturity to a considerable size. In woods and moist thickets the plant is often common, and has a range extending from Florida to New England and Quebec. It is well known by the country people who find a good market for its roots.

U. sessilifolia, sessile-leaved bellwort, as its name would imply, bears leaves that are sessile. In outline they are oblong or lanceolate and pointed at both ends. Underneath they have a pale, glaucous bloom. The greenish yellow flowers are rather inconspicuous.

U. pubérula, mountain bellwort, grows through the mountainous woods of Virginia to South Carolina; the region where it was first discovered by Michaux. Its stem is stout and rather pubescent towards the summit. The bright green leaves are sessile and also pubescent along the underside of the mid-vein, while the light yellow flowers have distinctly the marks of the genus.

LARGE FLOWERED ZYGADENUS.

Zygadenus glaberrimus.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Bunch-flower.	White.	Scentless.	Florida to Virginia.	July-September.

Flowers: quite large; perfect; growing in long, terminal panicles and bracted at the bases of their pedicels. *Perianth*: with six, oblong or lanceolate segments, clawed at their bases where there are two glands. *Stamens*: six. *Style*: with three recurved, arched divisions. *Leaves*: a foot or more long; linear, tapering to a point at the apex and sheathing the stem at the base; glabrous, and slightly glaucous. *Stem*: upright; two to four feet high; leafy; smooth. *Rootstock*: thick.

Although this tall, conventional-looking wild flower grows mostly near the coast it sometimes strays further inland, and even oversteps the borders of its range. Always it is a notable figure, surprising to those who do not know the aspirations towards cultivation of some wild flowers.

Z. leimanthoides, pine-barren *zygadenus*, is found in swamps, or in the wet soil about pine barrens and has a range extending from Georgia to New Jersey. In North Carolina it ascends some of the high mountains and was found by Dr. Mohr on Roan Mountain. It differs from the foregoing species in that its lower leaves are blunt at their apices; its many flowers, often greenish with the segments of their perianth destitute of claws; and that instead of glands at their bases they are marked with a yellow spot.



THE LILY FAMILY.

Liliaceæ.

Represented in our range by scapose or leafy-stemmed herbs which arise from bulbs or corms, or infrequently from rootstocks, fibrous fleshy roots or a woody caudex. Flowers: regular, consisting of six divisions of the perianth; six stamens; a three-celled ovary with united styles and a three-lobed or capitata stigma. Fruit: a capsule.

SOUTHERN RED LILY. (Plate XVI.)

Lilium Catesbæi.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Lily.</i>	<i>Scarlet-yellow, purple spotted.</i>	<i>Scentless.</i>	<i>Alabama and Florida to North Carolina.</i>	<i>July, August.</i>

Flowers: terminal; solitary; erect. *Perianth:* with six lanceolate segments, much narrowed and pointed at the apex, contracted at the base and becoming yellow with deep maroon spots; wavy along the margins. *Stamens:* six their anthers attached at the middle. *Leaves:* those from the base, very long. *Stem-leaves:* alternate; sessile; narrowly linear; pointed at the apex; smooth. *Stem:* one to two feet high from a scaly bulb; unbranched; leafy; smooth.

Late in the summer, when through the pine barrens but few flowers are to be seen, or when those that do appear fail to inspire the sentiment which clusters about many little harbingers of spring, this lily arises and through its gorgeousness gives a different but intense delight. It appears then, and especially when lit by the slanting rays of sunshine which pass through the grey tillandsia, almost mysterious in its radiance. There are other wild red lilies more beautiful, but this one is peculiarly of the south. In finding it there lurks always a charm.



PLATE XVI. SOUTHERN RED LILY. *Lilium Catesbaei*.

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L. Philadelphicum, wild red or wood lily, has the same peculiarity as the southern red lily of having its petals narrowed into long claws at their bases, and which are spotted with purple. The leaves are lanceolate, mostly acuminate at both ends and grow in whorls of from three to eight about the stem. The flowers are erect in habit, and a single plant bears from one to five. This is a lily, however, subject to many variations.

ASA GRAY'S LILY. (Plate XVII.)

Lilium Grayi.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Lily.</i>	<i>Orange-red, spotted.</i>	<i>Scentless.</i>	<i>Mountains of Va. and N.C.</i>	<i>July, August.</i>

Flowers: solitary or less often two or three growing at the end of the stem; nodding or occasionally ascending. *Perianth*: funnel-form, with six oblong-spatulate, or oblanceolate segments, pointed at the apex and spotted with dark purple. *Leaves*: growing in whorls of from three to eight; oblong-lanceolate; pointed at the apex and narrowed or pointed at the base; entire; finely roughened on the underside of the veins. *Stem*: erect; simple; smooth; from a bulb with thick, imbricated scales.

When Dr. Asa Gray was searching for flowers in the southern mountains in 1840, he gathered on Roan Mountain a lily which, through its strong resemblance to *Lilium Canadense*, he deemed to be that species, and had it preserved in his herbarium at Cambridge. Again in 1879, when he and Professor Sargent went over the mountains they found similar ones growing. Dr. Sereno Watson, however, after closely observing the lily became confirmed in the belief that it possessed certain traits quite at variance with those of *Lilium Canadense*, and, therefore, set it aside as a distinct species and honoured it with its discoverer's name. The flower appears smaller than do those of the Canada lily, its head is most often nodding and while its segments are open they are not reflexed. It is also of a deeper tone of colour. All this indeed is still found to be true by those that ascend the high mountains, where its bright colour is seen gleaming from under alders and rhododendrons; but it is also true that when the lily is subjected to cultivation, for any length of time, it loses much of its wild charm of individuality and sooner or later shows more the character of *Lilium Canadense*.

Lilium Canadense, wild yellow lily, or meadow lily, extends southward as far as Georgia, Alabama and Missouri. Occasionally as many as fifteen beautiful blossoms crown the plant and nod from long peduncles. Their segments are spreading, or recurved, yellow, or red and closely spotted with rich brown. The leaves grow in whorls about the stem, are lanceolate and slightly rough on the margins and undersides of the veins.

L. Caroliniænum, Carolina lily, is one frequently encountered throughout the mountainous woods of North Carolina, from whence it extends to

Florida and Louisiana. It is startlingly beautiful when its graceful head is seen nodding through the wood's undergrowth. Although several flowers sometimes grow on the stem, a solitary one is more often seen. Its segments are lanceolate, pointed and arched backward so that the tips frequently overlap each other. They are of an intense orange-red marked with many purple spots. The plant is a low one, not growing over three feet high, and has oblanceolate leaves.

L. superbum, turk's cap lily, is a gorgeous plant, growing at times eight feet high and having been known to bear in a large panicle as many as forty deep orange coloured flowers, although it is more usual to find a smaller number. They nod from long peduncles. The perianth segments are long, lanceolate, pointed and greatly recurved. In fact they are often so closely folded backward that a turk's cap has by them been suggested. That the flowers have this characteristic is the reason it would seem why so many of the country people mistake the plant for *Lilium Caroliniana*, which in a slighter degree possess the same trait. Its greater and more abundant growth however, should mark it distinctively.

Nolina Georgiana.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Lily.</i>	<i>White.</i>	<i>Scentless.</i>	<i>Georgia and South Carolina.</i>	<i>April, May.</i>

Flowers: small; growing in a raceme often two feet long; minutely bracted at the bases of their pedicels, which are thread-like and become reflexed in fruit. *Perianth*: divided into six segments. *Stamens*: six, on the perianth. *Anthems*: cordate. *Stigmas*: three. *Capsule*: obovate; three-valved. *Leaves*: those from the base very long, narrowly linear, pointed at the apex, rough and file-like on the margins; those of the stem, shorter, sessile and harsh. *Scap*: two to three feet high; smooth; sparingly leafy; branched above. *Root*: bulbous; large.

This is one of the flowers about which there exists no folk-lore, no poetry. Year after year the natives trample it down in an unobservant way as they stride through the dry, pine barrens. Yet it is a pretty thing. One curious trait it shows is the clinging persistence of the perianth segments as they wither.

N. Brittonidna, a new species which has but recently been determined, grows in sandy soil through the high pine regions of Florida. It has been named in honour of Dr. Britton.

YELLOW ADDER'S-TONGUE.

Erythronium Americanum.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Lily.</i>	<i>Yellow.</i>	<i>Scentless.</i>	<i>Florida and Missouri to Nova Scotia and westward.</i>	<i>March-May.</i>

Flowers: at the summit of a peduncle which is about the length of the leaves, and sheathed by their bases; solitary; nodding. *Perianth*: with six, linear-lance-



PLATE XVII. ASA GRAY'S LILY. *Lilium Grayi*.
(53)

olate, recurved segments, streaked on the outside with purple. *Stamens*: six, included; anthers, attached at their ends. *Pistil*: one. *Style*: club-shaped. *Leaves*: but one on the young, flowerless plants, and two or rarely three on the flowering individuals; oblong, pointed at the apex and tapering into sheath-like, clasping petioles; thin; glabrous; mottled with purple and brown. An erect plant which arises from an ovoid corm.

Those who wander much in the woods are prone to watch with delight the early up-springing of this plant's quaint leaves which proclaim so surely the end of winter and the coming of their own small lily. It is a sprightly, bright little flower, and has never a languid air when growing in its natural habitat, in woody, wet places, or about old trees. Shortly after it has been picked, however, it droops and closes its petals. For a long time after the bloom has passed these upright and clear-cut leaves, which are not unlike the ears of a startled fawn, remain a feature of woodland scenes, and as they grow old, they blend most attractively on their surface colours changing from brown to purple. Often the plants cover the ground in dense, thick masses. The country people collect them before flowering to use medicinally. It is to be lamented that they mostly know the plant by the misleading name of dog's-tooth violet.

YELLOW COLIC-ROOT. (Plate XVIII.)

Aletris aurea.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Lily.</i>	<i>Yellow.</i>	<i>Scentless.</i>	<i>Texas and Florida to Virginia and New Jersey.</i>	<i>April-August.</i>

Flowers: small; growing in a long raceme at the end of a scape from one to three feet high. *Perianth*: bell-shaped; ascending; with six ovate, pointed lobes, somewhat rough on the outside. *Stamens*: included. *Pistil*: one, the ovary three celled. *Leaves*: those of the base, tufted; one and a half to three and a half inches long, oval, or linear oblong, pointed at the apex and tapering at the base into very short petioles; smooth; stem leaves, few; sessile; linear; very small and bract-like among the flowers. *Roots*: fibrous; bitter.

In dry, pine barrens this tall stemless herb is found sending forth a wand-like raceme of bell-shaped bloom which is dainty and yet very noticeable. The pale yellowish green leaves, forming a rosette about the base, also add considerably to its attractiveness. Near Summerville, South Carolina, and about Jacksonville, Florida, the plant appears to thrive amazingly well.

A. farinosa, colic-root, star-grass, is a more widely distributed and better known plant than the already mentioned one. In the south also a form with golden yellow flowers which has been heretofore associated with this species has been recently described by Dr. Small as *Aletris lutea*. The species, however, which we are regarding has white flowers and their perianth



PLATE XVIII. YELLOW COLIC-ROOT. *Alctris aurea*.
(55)

is tubular-oblong. The leaves are lanceolate, or linear-lanceolate, considerably longer and narrower than those of the yellow colic-root, and are thin and flat with the same pleasing yellowish tint. Through the Alleghanies, the mountain people gather the roots of this plant in the early autumn, as they have medicinal properties, and by selling them make quite a little money. Abundantly it is found in sandy, moist soil throughout much of our range.

SPANISH BAYONET. (*Plate XIX.*)

Yucca aloifolia.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Lily.</i>	<i>White.</i>	<i>Fragrant.</i>	<i>North Carolina to Florida and Louisiana.</i>	<i>June, July. Fruit: Aug.-Oct.</i>

Flowers : large; showy; growing in a terminal panicle and nodding from round, bracted pedicels. *Perianth*: campanulate, rounded, with six ovate lanceolate segments, pointed or blunt at the apex and somewhat united at the base where they are purple tinted. *Stamens*: six; short; included. *Fruit* : long; elliptical, purple when ripe. *Leaves* : one to three feet long; alternate; clustered at the summit of the caudex; linear-lanceolate; taper-pointed at the apex and tipped with a sharp prickly; rough and file-like on the margins; soon becoming reflexed. Occasionally a tree with endogenous stem twenty-five feet high, more often from four to ten feet high.

So familiar in cultivation is now this genus of plants that they appear less strange than formerly to those who see them along the banks of the St. John's River, or on the sand dunes of the Atlantic coast. They are striking, bold individuals and have much about them that is interesting. As a means of preventing self-fertilization their stamens are shorter than the ovary and insects are therefore necessary to carry their pollen masses to the stigma. *Yucca aloifolia*, however, is constructed so as to be more nearly able to perform this act than any other of the genus. Moths, known popularly as the yucca moths, are usually their ambassadors and so wonderful are their tactics that they well repay a close and observant study. The bogus yucca moth assists also in the disseminating of the seeds. In the stalk of the flowering panicle it lays its eggs and, therefore, late in the season, when the fruit is well dried, the young larvæ cut through the stalk, and as it falls to the ground the seeds become scattered. The fact that the fruit of *Yucca aloifolia* dries up when ripe makes some such vigorous stroke as this necessary. Mocking-birds greedily devour the seeds and also effect their distribution.

By the negroes and many whites as well, the sweet, fleshy fruits of the yucca are eaten and which, from a similarity in their shape, they call bananas. In Mexico where there are several species this practice is prevalent, and they are besides made into a fermented beverage. Both the Indians and



PLATE XIX. SPANISH BAYONET. *Yucca aloifolia*.
(57)

the Mexicans make use of the saponaceous rootstocks, and the former value the leaves to weave into baskets, ropes, mats and strings.

Y. filamentosa, Spanish bayonet, or Adam's needle, also very familiar in cultivation, sends forth a high bracted scape and bears its flowers in a large showy panicle, the branches of which diverge widely. Its woody stem or caudex is very short. The leaves are linear-lanceolate, pointed at the apex and noticeable from the thread-like fibres which separate from their margins and which are considerably used by the natives for binding purposes. The mere possibility that Adam might have sewn his first suit of clothes together with the stiff sharp point of the plant's leaf has caused it, so we suppose, to be called his needle. In its wild state it occurs from Maryland to Florida and Louisiana.

Y. gloriosa, Spanish dagger, is often found growing in the same neighbourhood as *Yucca aloifolia*. It is a smaller plant and one that has smooth leaf margins.



LILY-OF-THE-VALLEY FAMILY.

Convallariaceæ.

Either scapose or leafy-stemmed plants with rootstocks, never growing from bulbs or corms, and which bear regular flowers and fleshy, berry-like fruits.

WHITE CLINTONIA.

Clintonia umbellulda.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Lily-of-the-Valley.</i>	White.	Fragrant.	Ga. and Tenn. northward.	May, June.

Flowers: growing in a terminal umbel on a slightly pubescent scape, eight to eighteen inches high and which sometimes bears midway a small leaf. *Perianth*: with six divisions, pointed or obtuse at the apex and narrower at the base. *Stamens*: six, inserted at the base of the perianth. *Anthers*: prominent. *Fruit*: blue, round, berry-like. *Leaves*: from the base; sheathed; oblong, acute at the apex, ciliate and hairy on the mid-vein and margins; bright green and glabrous above; thin. *Rootstock*: creeping.

This very symmetrical and attractive individual which we find in cool, shady woods has something the look of a water plant. Unfortunately it was no longer in bloom when I saw it at a high elevation in the mountains

of Tennessee, but it appeared perhaps equally effective as it was beginning to ripen its deep blue fruit. The generic name is in honour of De Witt Clinton.

C. borealis, yellow clintonia, bears, in its loose umbel, from three to six drooping flowers which are yellow. They are quite as large again as those of the white species, and it is but seldom that a small leaf occurs midway on the scape. The fruit is black. Also at high altitudes the plant grows, and usually in the trees' dense shade.

HAIRY DISPORUM.

Disporum lanuginosum.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Lily-of-the-Valley.</i>	<i>Yellow.</i>	<i>Scentless.</i>	<i>Tennessee and Georgia northward to New York and Ontario.</i>	<i>April-June.</i>

Flowers : solitary or a few growing together on pubescent pedicels. *Perianth* : bell-shaped, with six linear-lanceolate pointed segments. *Stamens* : shorter than the perianth; anthers facing outward. *Berries* : oval; bright scarlet; smooth. *Leaves* : alternate; sessile; lanceolate-ovate, long pointed at the apex; thin; light green, and when young pubescent, especially along the well defined nerves. *Stem* : one to two and a half feet high; much branched, slightly pubescent, becoming smooth at maturity.

So leafy is often the stem of this pretty plant that it is sometimes a surprise to find its bell-like flowers. In rocky woods, it grows and through the Appalachian system, often at an elevation of five thousand feet, is a noticeable feature of the vegetation.

D. maculatum, spotted disporum, bears flowers similar to those of the hairy disporum, but they have their perianth segments covered with fine, purplish dots. Their stamens are exserted and the anthers quite conspicuous. It is abundant near Hot Springs, North Carolina.

TWISTED STALK, SESSILE-LEAVED TWISTED STALK.

Streptopus roseus.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Lily-of-the-Valley.</i>	<i>Rose-purple.</i>	<i>Scentless.</i>	<i>Georgia northward and westward.</i>	<i>May-August.</i>

Flowers : small; nodding from thread-like, axillary and twisted peduncles. *Perianth* : bell-shaped, with six lanceolate, spreading, recurved segments. *Stamens* : six; included. *Pistil* : one; stigma three-cleft. *Fruit* : a globose, red berry. *Leaves* : alternate; ovate-lanceolate; long pointed at the apex, rounded and clasping at the base; ciliate on the margin; thin. *Stem* : one to three feet high,

branched above and sheathed below with a membranous scale, the young growth slightly pubescent.

It is a common error, and one in which for a long time I shared not having seen this plant, to think that its stalk is twisted; for the popular name is altogether in allusion to the twist or bend which occurs at about the middle of its fine peduncles. Almost hidden under the leaves, the dainty flowers hang. In fact, the whole effect of the plant is that of a superabundance of leaf and very little flower. By the side of a high mountain stream I saw it growing when in North Carolina.

LILY-OF-THE-VALLEY. MAY LILY.

Convallaria majalis.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Lily-of-the-Valley.</i>	<i>White.</i>	<i>Fragrant.</i>	<i>Va., N. C. and S. C.</i>	<i>May, June.</i>

Flowers: nodding, and growing loosely in a one-sided raceme; their pedicels thread-like and bracted at their bases. *Perianth*: campanulate; rounded, the lobes somewhat recurved. *Stamens*: six; included. *Pistil*: one. *Leaves*: smooth; large; usually two which arise higher than the flowers; oval, pointed at the apex and tapering at the base into petioles. Basal scales large, one sheathing the erect, angled and glabrous scape.

In this country, it is only in the higher Alleghanies that the lily-of-the-valley is found growing wild and absolutely untrammelled by the laws of cultivation. But there on the mountain slopes it flourishes in a state of almost unrivalled luxury, especially where a humid atmosphere prevails. It is one of the group of plants which although so localized in the south is apparently identical with relatives which grow in parts of Europe and Asia. By the mountaineers it is known mostly as the "May lily," in which month it begins to bloom. It then casts abroad sufficient fragrance to be wafted to a considerable distance. In all parts of this lovely flower there is a poisonous crystalline compound known as convallamarin which causes most animals to refuse to eat of it, although goats and sheep appear to be hardy enough to withstand its known and evil action on the heart.

WAKE ROBIN. INDIAN PINK.

Trillium stylodum.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Lily-of-the-Valley.</i>	<i>Rose and white.</i>	<i>Scentless.</i>	<i>Georgia to North Carolina.</i>	<i>April, May.</i>

Flowers: large; solitary at the end of long recurved peduncles. *Perianth*: showing three lanceolate short sepals, and three oblong petals, pointed or rounded

at the apex and wavy on the edges. *Stamens* : six, with long, recurved anthers. *Stigmas* : slender, united below the middle. *Leaves* : growing in whorls of three at the summit of the stem; short petioled; oval-oblong; pointed at both ends; entire; thin; nearly glabrous. *Stem* : one to two feet high, slender; smooth. *Rootstock* : tuberous.

In shady glades often at the bases of high mountains this very pretty trillium grows and is one that is peculiar to the south. In the late season many that walk in the woods stop and wonder at the distinctive and oft-repeated foliage of these low herbs, and yet have no idea that earlier in the season they have borne the showy blossoms of one of the noted trilliums, a family celebrated for its beauty and excellent traits. In cultivation, however, we see every year that they become more popular. Of nearly all the genus the rhizomes are collected and used in the domestic practice of medicine when they serve as nerve tonics. Between the various species, however, the natives make considerable distinction.



UNDERWOOD'S WAKE-ROBIN.

Trillium Underwoodii.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Lily-of-the-Valley.</i>	<i>Reddish purple.</i>	<i>Like musk.</i>	<i>Tenn. and N. C. to Fla. and Ala.</i>	<i>April, May.</i>

Flowers : terminal; sessile. *Perianth* : with three lanceolate sepals, pointed or blunt at the apex and three oblong or oblanceolate petals, often two and a half inches long. *Stamens* : six, with long, linear anthers. *Leaves* : in a whorl of three directly below the flower; orbicular or broadly ovate, pointed at the apex and rounded or narrowed at the base; entire; thin. *Stem* : erect; simple; sometimes a foot and a half high and sheathed at the base with a membranous scale. *Rootstock* : horizontal.

Before this trillium was described by Dr. Small, it erroneously passed under the name of *Trillium sessile*. Through its range it appears to be the common form, where it grows in the rich soil of mountainous ravines and in wooded, ferny places.

T. grandiflorum, large-flowered wake-robin, or birthroot, is always an agreeable find through the woods, as its pure white flowers, turning later to pink, are very handsome, and when many of them grow together the plant makes an especially fine showing. Its spreading petals, as the coloured segments of the perianth are commonly called, are considerably larger than the sepals, or set of green ones, often approaching in fact three inches in length. The plant grows from ten to eighteen feet high and its large leaves are whorled just below the base of the flower's peduncle. From Missouri to Quebec its range extends, and it is not uncommon in many cool, damp woods. As a garden plant it is very desirable.

T. erectum, ill-scented wake-robin, or nose bleed, is known by its handsome nodding flower, reddish in its gayest form, or sometimes pink, or white. The segments of its perianth are lanceolate and the so-called petals are but little longer than the sepals. But the flower has an unexpected, fetid odour which greatly detracts from its otherwise agreeable personality. The mountain people, especially those of the Cumberland and Alleghanies, find, however, more efficacious results from the use of this species of trillium in the treatment of nervous diseases than from any other one. From Missouri it extends northward to Nova Scotia.

T. cernuum, nodding wake-robin, has a flower that droops very much, in fact, it is often quite hidden beneath the leaves. Its petals are pink or white, recurved and undulating on their margins. They are but little longer than their sepals. The range of the plant is quite extended.

T. sessile, sessile-flowered wake-robin, is a small plant at most about twelve inches high. Its leaves are nearly orbicular and about the purplish, sessile flower there is a pleasant fragrance. Pennsylvania is the limit of its progress northward.



THE SMILAX FAMILY.

Smilacæ.

Mostly vines, with usually woody and sometimes prickly stems and simple, alternate, petioled leaves which are netted-veined. At the bases of the petioles arise a pair of persistent tendrils through the aid of which the plant climbs. Flowers: very small; diœcious; mostly green, and

growing in axillary umbels. Segments of the perianth : six. Fruit : a rounded berry.

HISPID GREENBRIER.

Smilax hispida.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Smilax.</i>	<i>Greenish.</i>	<i>Scentless.</i>	<i>Texas, and Virginia to Ontario and westward.</i>	<i>May-July. Fruit: August.</i>

Flowers : regular ; growing on peduncles in axillary umbels ; the pistillate ones, very small. *Perianth* : with six lanceolate, pointed segments. *Stamens* : six, the filaments little longer than the anthers. *Berries* : bluish black ; round. *Leaves* : ovate, abruptly pointed at the apex and cordate or blunt at the base ; usually seven-nerved, entire ; bright green on both sides ; slightly ciliate. *Stem* : stout, and covered thickly with straight sharp prickles. *Twigs* : angled ; glabrous.

This vine commonly found in thickets, and climbing as it does by means of tendril-like appendages borne at the bases of its petioles, is one of the notable features of the early autumn. Often it forms veritable tangles made almost impassable by the propensities of its sharp spines. Then its blue-black berries are ripening and the leaves show almost every shade of yellow and brown. In such close bunches does the fruit grow that once when I found it intermingled with that of a wild grape vine, it was with some difficulty I separated the two and in doing so was mostly guided by the difference between the clusters and the fine fragrance of the grapes. But then naturally the leaves of both vines had nearly ceased falling.

LAUREL-LEAVED GREENBRIER.

Smilax laurifolia.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Smilax.</i>	<i>Greenish white.</i>	<i>Scentless.</i>	<i>Texas and Florida to New Jersey.</i>	<i>March-August. Fruit: September.</i>

Flowers : very small ; growing abundantly in umbels on axillary, squared peduncles. *Berries* : ovoid or globose, ripening in their second year when they become black. *Leaves* : with short, stout petioles ; oblong ; ovate or oblanceolate, pointed or blunt at the apex, occasionally projecting the midrib and narrowed or rounded at the base ; entire ; with strong marginal veins ; coriaceous ; evergreen. *Stem* : stout ; climbing ; woody ; the lower part armed with prickles somewhat over one-quarter of an inch long.

Through the lower districts especially in wet places, this vine is seen climbing by means of its tendrils to the tops of very high trees. Its large spines and laurel-like, evergreen foliage should be remembered as marks of the species. As is true of nearly all the genus its flowers are individually very insignificant, although when as many as thirty of them grow in one cluster, which is not unusual, they make quite a fair showing.

S. rotundifolia, green brier, cat brier, or common bamboo, grows often in thickets, or where the soil is moist, and is prone to climb as high as thirty or forty feet. Its branchlets are slightly angled and armed with stout spines,

By the rounded, cordate leaves which are deciduous, the species may be known, and also by its bluish black berries which grow in umbels.

S. lanceolata, lance-leaved smilax, throws out early in the season in its inflorescence an abundance of bloom which is white and fleecy; but it is in the winter time that the vine is most conspicuous. Then its round berries have turned to red, and they shine brightly among the lance-shaped and evergreen leaves. From Texas and Florida to Virginia it is a rather frequent inhabitant of moist thickets.

One other species is known which bears red berries, Walter's smilax, *S. Walteri*, and they are almost coral colour. It grows through our range in the pine barrens, or swamps of the lower district where thickets prevail and while not a very high climber is found running over bushes or even ascending small trees. It may be recognised by the rounded bases of the leaf-blades.

S. bona-nox, bristly green brier, or wild sarsaparilla, occurs from Florida to New England, often in the damp ground of river banks. It is well marked by its broadly ovate leaves which are compressed at the middle, and deeply cordate, or incline to form two rounded lobes at the base. Fiddle-shaped they are sometimes said to be. On both sides they are green and lustrous. From their margins occasionally short, fine spines are projected, while again they are quite smooth. On the branchlets also are a few rigid prickles. The large tuberous rootstocks of this species and those of *Smilax Pseudo-China*, bamboo brier, are collected in the autumn and made into a drink used as sarsaparilla.

S. auriculata, a straggling species which inhabits Florida and places near the coast, has a low stem forming a zig-zag line and is found rambling over many small shrubs. It is but slightly prickly. The stiff leaves are lanceolate, often inclined to form two broad, blunt lobes at their bases and sometimes project from the apex, the midrib. They are besides coriaceous and evergreen. The flowers are fragrant, while in October many bluish black berries hang from the vine.

S. pumila, mostly an inhabitant of the dry, oak woods of Florida and South Carolina, has large, long ovate leaves, deeply cordate at their bases. When young their undersides are covered as are the stems and petioles with a dense, brownish grey pubescence. The berries are almost white, or orange-yellow.

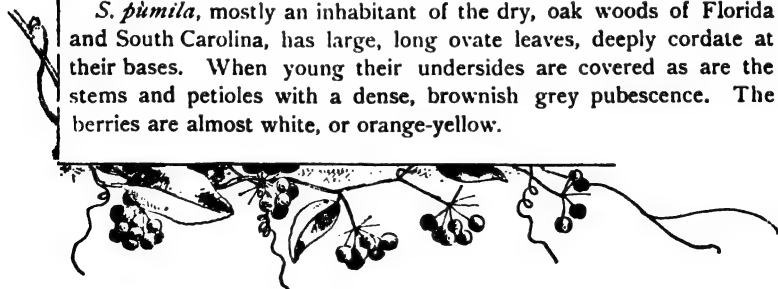




PLATE XX. ATAMASCO LILY. *Atamosco Atamasco*.
(65)

THE AMARYLLIS FAMILY.

Amaryllidaceæ.

Chiefly stemless, smooth and succulent perennial herbs, which arise from bulbs or rootstocks, and have scapose or leafy stems and mostly narrow and entire leaves. Perianth : six parted, or lobed. Stamens : six; style, one. Fruit one to three-celled, capsular.

FALSE ALOE.

Agave Virginica.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Amaryllis.</i>	Greenish yellow.	Fragrant.	Florida and Texas to Maryland.	July.

Flowers : growing in a long spike at the end of a smooth, bracted scape, the lower ones with very short pedicels. *Perianth* : tubular; ascending, expanding at the apex and having six short lobes. *Stamens* : six; their filaments long, thick and greatly exerted. *Style* : exerted; three-lobed. *Capsule* : ovoid, and showing the persistent, withered perianth at its apex. *Leaves* : from the base; long; narrow; pointed at the apex, and sheath-like about the stem; rough on the margins; many nerved; smooth; thick. *Scape* : two to six feet high; smooth; and bearing several close, sharply-pointed scales. *Rootstock* : short.

In sterile, or dry soil this pretty plant grows and is rather a conspicuous individual from the way the flowers point up instead of turning downward, as is the habit with which we are mostly familiar. Although the custom is very prevalent, it is quite improperly that the agaves are called aloes and century plants. The narrow-leaved species, such as the present one, a fact also true of yuccas with this characteristic, are again known to the natives of the south and southwest under the name of "palmilla." Every year their roots are sought and used domestically as a curative for dyspepsia.

Agave Virginica is also one of the numerous plants credited with the power of being a rattle-snake master.

ATAMASCO LILY. STAGGER-GRASS. (Plate XX.)

Atamásco Atamásco.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Amaryllis.</i>	White, tinted with purple.	Scentless.	Florida and Alabama to Virginia.	March-June.

Flowers : solitary at the end of the scape and subtended by a two-cleft, membranous bract. *Perianth* : funnel-form, with six, rarely eight, spreading, pointed segments; thin. *Stamens* : six; shorter than and inserted on the throat of the perianth. *Antlers* : versatile. *Style* : considerably longer than the stamens; three-cleft at the apex. *Leaves* : from the base; long; grass-like; smooth; somewhat fleshy; lustrous. *Scape* : erect, from an ovoid bulb coated with a membranous scale.

So fragile and elfin-like is this beautiful flower that it seems hardly possible it should withstand the fierce winds and driving rains that often beat down on it as it stands the solitary sentinel of some moist place. But it fades quickly, sometimes almost before it has fully opened.

A. Treatia, a species wonderfully similar to the preceding, is found in the low grounds of Eastern Florida. Its leaves, however, are without lustre, and are rather rounded about their margins. The perianth segments also are somewhat obtuse.

ST. JOHN'S LILY. AMERICAN CRINUM.

Crinum Americanum.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Amaryllis.</i>	<i>White.</i>	<i>Fragrant.</i>	<i>Florida and westward.</i>	<i>May-October.</i>

Flowers: large; showy; from two to five growing erectly in an umbel at the summit of a thick scape. *Perianth*: white with six, linear-lanceolate, spreading segments; shorter than the greenish tube. *Stamens*: six; their filaments slender. *Leaves*: long; strap-shaped, or linear and tapering to a blunt point at the apex; remotely toothed. *Scape*: one to two feet high; thick; rounded on the edges; smooth. *Bulb*: coated.

One of the most potent charms of the unusual scenery along the banks of the St. John's river in Florida is the tangled masses of this plant's milk-white and intensely fragrant flowers; and so luxuriantly do they grow that morning glories twine about them and they dispute the soil with thrifty sagittarias. So spreading and slender are the segments of their perianth that the greater number of natives call the plant, and not inappropriately, the "spider lily," although this name seems more especially to belong to members of the genus *Hymenocallis*. It is a rare thing to find the flowers in perfect condition for even before they are fully blown they are devoured by grasshoppers of great size.

SPIDER LILY,

Hymenocallis occidentalis.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Amaryllis.</i>	<i>White.</i>	<i>Fragrant.</i>	<i>Georgia and Tennessee northwestward.</i>	<i>July-September.</i>

Flowers: very large; showy; six to twelve growing in an umbel at the end of a tall, two-edged scape; the flowers being subtended by lanceolate, membranous bracts. *Perianth*: with six long, very slender, spreading divisions which unite at their bases into a long, cylindric tube. *Stamens*: six; their filaments long and united by a thin formation called the crown, and which is funnel-shaped with six, toothed lobes. *Antlers*: long, attached at the middle. *Style*: slender; greatly exerted. *Leaves*: from the base; linear-oblong, strap-shaped; tapering to a blunt point at the apex; smooth; glaucous. The plant arises from a large bulb.

Amid a diversified vegetation of exceeding fruitfulness and beauty this

lily exhales its almost stupifying breath, so redolent is it of an intensely heavy perfume. Usually it grows by water, but it is not dependent on moisture nor confined to the banks of the rivers, as it is also found in dry soil.

As a genus these plants are known, for one thing, by the graceful crown which unites their filaments, and which gives to many of them a curious, although enchanting appearance.

H. lacera is quite distinctive from the preceding species; its linear-oblong leaves being much broader and also because of the flower's almost bowl-shaped crown. Often its slender perianth segments are fully four inches long. It is only seldom that more than two flowers are borne at the end of the scape.

H. crassifolia bears at the summit of its scape two very large, yellowish white flowers which have a greatly extended perianth-tube and a large, funnel-shaped crown. The leaves are strap-shaped, erect and somewhat shorter than the glaucous scape. In Florida it is found through low barrens.

STAR GRASS.

Hypoxis juncæa.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Amaryllis.</i>	Yellow.	Scentless.	Fla. and Ga. westward.	March, April.

Flowers: solitary, or a few growing on villous pedicels in an umbel at the end of a slender scape, and being subtended by bristle-like bracts. *Perianth*: with six, oblong pointed segments, widely spreading, the outer ones greenish and hairy on their outsides. *Stamens*: inserted at the base of the perianth. *Filaments*: short. *Stigmas*: three. *Leaves*: from the base, grass-like or filiform; sparingly hairy. *Scape*: four to nine inches long; pubescent towards the apex.

From a small rootstock this pretty plant springs, and is truly a little missionary of light and cheerfulness as it occurs through pine barrens, where from a long distance its star-like face can often be seen peering out from the grass. There is, in fact, much about these blossoms to suggest the family of *Sisyrinchium*s, the members of which, however, have either blue or purple flowers.

H. hirsuta, yellow star-grass, is very similar in general characteristics to the preceding species. In detail it has broader leaves, and a more conspicuous woolly white pubescence. Its range also is more extended, being from Texas and Florida to Maine. Formerly the little plant was called the "Star of Bethlehem."



PLATE XXI. ST. JOHN'S RIVER.

"City of Jacksonville"

St. John's River.

When passing through Lake George we had been almost out of the sight of land; but as the river narrowed to about twice the width of the boat and became tortuous we were better able to see the vegetation along the shores. A bald cypress had clinging to it a mistletoe vine, and from all the trees hung swaying masses of moss tinting the scene as with the greyness of age and subduing the cheerfulness of gay bloomers. But seldom, for its season was waning, stood high a great sagittaria. In abundance the fragrant spider lily spread its slender petals. Masses of the moonflower's leaves prevented its being forgotten, and in the water, appearing like a great, intensely black mirror, was reflected brightly a pale pink and waxen morning glory.

(XXI.)

THE YAM FAMILY.

Dioscoreaceæ.

WILD YAM-ROOT.

Dioscorea villosa.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Yam.</i>	<i>Greenish yellow.</i>	<i>Scentless.</i>	<i>Texas and Florida northward and westward.</i>	<i>June, July. Fruit: Sept.</i>

Flowers : small ; diœcious ; regular ; growing in axillary drooping panicles or in spike-like racemes. *Perianth* : divided into six segments. *Capsule* : large ; nodding ; rounded, with three flaring, membranous wings. *Leaves* : simple ; alternate ; or the lower ones opposite, with long smooth petioles ; cordate ; seven to thirteen nerved ; entire ; bright green and glabrous above, paler below and covered with a white pubescence ; thin. A woody, twining vine, five to fifteen feet long ; glabrous. *Rootstock* : woody ; tuberous.

In our species, the wild yam root, are typified the leading characteristics of the family *Dioscoreaceæ*, which has been so named in honour of the Greek physician and eminent writer on plants, Dioscorides, who lived in the time of Nero. Along the moist thickets of river banks and by the margins of swamps it occurs as a rather common and graceful vine, becoming most decorative in the winter when its inconspicuous flowers have been replaced by showy racemes of curiously winged fruit. In the autumn the country people collect the rhizomes as they have some efficacy in a medicinal way.

Of a number of the tropical species the rootstocks are very large and fleshy and are the "yams," which are so much prized as articles of food.



THE IRIS FAMILY.

Iridaceæ.

Herbs with equitant, narrow leaves, and perfect, regular, or irregular flowers subtended by bracts and which grow singly or in clusters. Perianth : with six lobes or segments.

DWARF IRIS.

Iris verna.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Iris.</i>	<i>Blue or purple with yellow markings.</i>	<i>Fragrant.</i>	<i>Georgia and Kentucky to Pennsylvania.</i>	<i>April, May.</i>

Flowers : usually solitary and growing at the end of the flower stalk, which is sheathed and from one to four inches high. *Perianth* : with six nearly equal, obovate

segments, crestless and narrowed into claws, the outer ones slightly pubescent. *Stamens* : three, inserted. *Anthers* : linear. *Pistil* : one ; the style divided into three petal-like parts which arch over the stamens, and bear under their lobed tips, the stigmas. *Leaves* : from the base, equitant or folded together lengthwise ; sword-shaped ; glaucous. *Rootstocks* : horizontal.

It is mostly on hillsides or through the dry woods of the middle districts that this little iris arises, and its exquisite flowers shine brightly amid the trees' dark shade. They have a faint sweet fragrance somewhat similar to that of violets. The underground stems of the irises have all a very acrid, spicy flavour and are considerably used in medicine. From some of the cultivated species the renowned orris-root is obtained.

I. cristata, crested dwarf iris, also a small southern species, is found along rocky streams or in moist, grassy places. By its formation it would at once be known to be an iris, while the crested feature of the outer perianth segments adds considerably to its charm. The flower is blue, and the plant spreads by the means of a creeping, tuberous rootstock. Although a lowly individual it is very beautiful.

I. versicolor, larger blue flag, needs little introduction to the majority of readers, as its regal, beautiful flower claims many admirers. Its setting is usually that of a low, marshy meadow, or it grows by small brooks along the roadsides. In the autumn the rootstock is collected by the people, and by an old Tennessee mountaineer I was told that to carry a bit of it in the pocket and nibble on it occasionally would prove efficacious in the most stubborn case of indigestion. Later, however, I was warned that the same mountaineer belonged to a clan of notorious liars, but also was assured that that air statement was "lowed to be jest so."

"Born in the purple, born to joy and pleasance,
Thou dost not toil nor spin,
But makest glad and radiant with thy presence
The meadow and the lin."

LONGFELLOW.

STOUT BLUE-EYED GRASS.

Sisyrinchium graminoides.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Iris.</i>	<i>Blue.</i>	<i>Scentless.</i>	<i>Gulf States to Massachusetts.</i>	<i>April-July.</i>

Flowers : from two to four growing in terminal umbels and subtended by two erect, pointed bracts. *Pedicels* : long, thread-like. *Perianth* : with six spreading, obovate segments, their middle veins projected at their summits ; slightly pubescent on the outsides. *Basal leaves* : erect or declined ; usually somewhat shorter than the stem ; grass-like ; rough and file-like on the edges ; slightly glaucous. *Stem* : twelve to eighteen inches high ; erect ; broadly two-winged ; unequally branched at the summit and having a grass-like leaf at the base of the branches.

Many of us know these cheery little blossoms which somehow manage to glance out at us from amid their grass-like leaves, and are always crisp and bright-looking. Of this, our present species, the leading characteristics are its broadly winged stem, the rather wide leaves, and that in drying it turns to black.

In the south there are many species of this genus which now are recognised by a number of botanists, whereas, formerly, the books which were supposed to cover the field did not describe more than one or two.

S. Atlanticum, eastern blue-eyed grass, is a coastal species which occurs from Florida to Newfoundland. Usually it inhabits dry or moist soil, or grows in brackish, sandy places. By its very narrow leaves, which are considerably stouter than the stems, and its much branched inflorescence it may be known. The flowers are rather a pale blue, often with a lilac tint.

S. scabrillum is one from the mountains which has rough and minutely scabrous leaves. Its rather small flowers grow closely at the summit of the stem from where a grass-like bract arises above them.



THE CANNA FAMILY.

Cannaceæ.

Herbs with simple, alternate leaves which are sheathed and have numerous parallel-veins diverging widely from their midrib; the flowers being irregular with three sepals and six-parted corollas.

INDIAN SHOT.

Canna flaccida.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Canna.</i>	<i>Silver-yellow.</i>	<i>Scentless.</i>	<i>Florida to South Carolina.</i>	<i>June-August.</i>

Flowers : large ; showy ; solitary, or more usually a few growing in the spike. *Calyx* : with three linear-lanceolate pointed sepals, often two inches long. *Corolla* : funnel-form, six-parted, the three exterior divisions reflexed and similar to the sepals ; the three interior ones, unequal and yellow. *Stamens* : with petal-like filaments. *Capsule* : densely covered with bristles. *Leaves* : nine to fifteen inches long ; lanceolate ; long pointed at the apex and tapering at the base into long petioles which sheathe the stem ; entire ; smooth with parallel divergent veins. *Stem* : two to four feet high ; stout ; leafy.

In the deep recesses of inaccessible, miry swamps, especially those of eastern and western Florida and near Jacksonville, this beautiful plant attains to the acme of its development. Its growth is then graceful and the blossoms very lovely. It would seem as though the plant should do well in cultivation although it is little known to most of us in gardens. The

genus, however, is very susceptible of improvement as has been widely shown by the results obtained with other species.



ARROWROOT FAMILY.

Marantidææ.

POWDERY THALIA.

Thalia dealbata.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Arrowroot.	Purple	Scentless.	Texas to S. Carolina.	June-September.

Flowers : perfect ; irregular ; growing in a paniced spike at the end of a scape three to six feet long, and having narrow, early falling bracts at the bases of the pedicels. *Sepals* : three ; minute ; equal. *Petals* : three, slightly coherent at the base. *Imperfect stamens* : slightly coherent ; one of them broad and crested. *Perfect stamen* : one. *Capsule* : ovoid. *Leaves* : from the base, very large, with smooth petioles, one to two or three feet long and swollen at the lower extremity ; ovate ; pointed at the apex and squared, rounded or sub-cordate at the base ; entire with parallel, divergent veins.

This striking looking plant which in the beginning was discovered by Mr. John Fraser near Jacksonborough, South Carolina, then became lost to botanists until it was refoand by Mr. Middleton along the banks of the Ashley river. It there flourished in great abundance. Perhaps its most unusual characteristic is the powder-like substance which covers it and by which it may be distinguished from any other one of its relatives. About the flowers there appear always to hover many large bumble bees which act as their agents in cross-fertilization, and as soon as this has taken place they quickly wither.

T. divaricata is known by its more open, divergent inflorescence and the zig-zag line which is formed by the peduncles. The flower's bracts are membranous, very long and pubescent on their outsides. The leaves are similar to those of the preceding species ; but on the plant there is no powdery substance.



THE ORCHID FAMILY.

Orchidæææ.

A large group of perennial herbs with bulbs, corms, or fibrous, or tuberous roots and either scale-like, or foliaceous, simple, entire leaves,

*sheathed at their bases. The flowers are perfect, irregular, always subtended by a bract, and grow either solitary or in racemes, or spikes; having a perianth of two sets of three divisions each answering to sepals and petals. Usually the sepals are coloured and petal-like. Sometimes by a twist of the ovary, or pedicel what would naturally be the upper petal is brought down and takes the place of the lower petal, or lip. Stamens: variously united with the style. With the exception of the *Cypripediums* which have two anthers, the order has but one, which is two-celled. Stigma glutinous. On either side of this stigma is a cell of the anther where the pollen grains are collected in little pear-shaped masses.*

LARGE YELLOW LADY'S SLIPPER.

Cypripedium hirsutum.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Orchid.	Yellow.	Scentless.	Alabama northward to Nova Scotia.	May-June.

Flowers: large; terminal; mostly solitary; subtended by a leaf-like, erect and pointed bract. *Sepals*: long; ovate-lanceolate. *Petals*: narrower than the sepals and curling, the lip much inflated, one and a quarter inches broad, forming a pouch with a rounded orifice; veined with brown, or purple, and tufted on the inside with white hairs. *Leaves*: alternate; oval or ovate, pointed at the apex and clasping the stem at the base; parallel veined; pubescent. *Stem*: one to two feet high; leafy; pubescent.

Great wanderers over the globe are the orchids, and sometimes it is as difficult to trace their footsteps as it is the mystical, mysterious sensations they produce. It has been said that they are the gypsies of the plant world, for they have a vagrant tendency and some are seldom content to confine themselves to the same locality. But in spite of their lack, perhaps, of constancy there are few families that can vie with them in diversity, in coquettishness, and in possessing the subtle trait of charm.

The large yellow lady's slipper is one of the common ones which we are always glad to find in the thickets and deep woods. Its manner of growth is well defined and we would be loath to pass it by, once having been attracted by the quaint curling of its lateral petals.

C. parviflorum, small yellow lady's slipper, grows often very closely to the larger one and of which it appears to be a small imitation. It is also, however, found through bogs and swamps. Occasionally, when it is unusually well grown and its relative is somewhat undersized, they might almost be taken for the same species, were it not that the little one is fragrant and has a lip of a deeper shade of yellow. It always remains a slender plant even when growing to the height of a foot and a half. The lip is be-

tween half an inch and an inch long. Of both these plants the roots are gathered and used by chemists as a substitute for valerian.

C. acule, moccasin flower, pink lady's slipper, or Noah's ark as it is locally called, is another elfin-like species possessed of singular charm, and which also has a delicate fragrance noticeable sometimes about even the foliage. In a solitary way the large blossom grows on a pubescent, leafless scape of from six to twelve inches high. Its spreading sepals are oblong-lanceolate and purplish, while the two lateral petals are narrower, pointed and of much the same colour. But the most attractive part of the flower is its large, inflated lip. This is rosy pink and veined with purple or less often of a pure white. Long after June when the bloom has passed away there remains as a feature of deep woods and rocky places the plant's two elliptical leaves which sheathe the scape near its base. They are marked by a roughish pubescence and are ciliate about the edges. From Tennessee it grows along the coast to Ontario and westward.

C. regina, showy lady's slipper, (*Plate XXII.*), must ever inspire a keen admiration in all who are fortunate enough to see its fair loveliness. In fact, by Dr. Gray it was regarded as the most beautiful of the genus. The sepals and petals of the large flowers are pure white while the lip is tinted with pink and marked and dotted with deep magenta. It is much inflated and has an oblong orifice. These flowers have also the charm of fragrance. At the summit of the pubescent and leafy stem one or occasionally about three flowers burst into bloom. They are an exquisite sight. The leaves are elliptical, ciliate on the margins and finely pubescent and in manner of growth suggest the foliage of *Cypripedium hirsutum*. From June until August there is for those that seek a chance of finding these rare flowers in the woods and swamps, and about as far southward as Georgia.

It is an interesting fact to recall that this species, as well as a related and larger one in South Africa, was at one time thought to have taken for its flowers the form of a great spider, the habit of which is to catch small birds and insects and then poison them by the venom of its bite. Being alarmed by the resemblance, it was further presumed that humming birds shunned the plant and its nectar was thus preserved from their plundering.

SHOWY ORCHID. SPRING ORCHID.

Orchis spectabilis.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Orchid.	White and purplish pink.	Fragrant.	Georgia and Kentucky northward and westward.	April-June.

Flowers: growing loosely in a short, terminal spike and being subtended by large, foliaceous bracts. *Sepals*: somewhat united and forming a sort of hood; petals converging under the petals. *Lip*: white; spreading and about equalling the



PLATE XXII. SHOWY LADY'S SLIPPER. *Cypripedium reginae*.

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PLATE XXIII. YELLOW FRINGED ORCHID. *Habenaria ciliaris*.
(75)

petals ; spur obtuse, two-thirds of an inch long. *Leaves* : two only, growing from near the base of the scape and below which are several membranous scales ; they are obovate, or oval, blunt-pointed at the apex and tapering at the base into sheathing petioles ; smooth ; shiny. *Stem* : five to twelve inches high ; five angled ; smooth.

A widely distributed little plant this is over the country and also one of the gayest of the genus, appearing through rich woods as an elfin-like thing where tall trees and bolder plants are congregated. Here it attracts the hungry bees which find in its tube an abundant supply of nectar.

It is one of the orchids that springs from a tuberous root, and as such finds favour with the country people in the preparation of a highly nourishing food for children. Those of the family with fibrous roots are mostly used as a cure for diseases of a nervous nature. But even in parts of the south where the natives seem to know the most about the practical uses of plants they drink these decoctions in almost unlimited quantities, by the gallon, in fact, and therefore incur an ill, rather than good result.

YELLOW FRINGED ORCHID. RATTLESNAKE'S MASTER.

(Plate XXIII.)

Habenaria ciliata.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Orchid.	Orange.	Scentless.	Florida and Texas to Ontario.	July-September.

Flowers : crowded in an oblong, showy spike, and subtended by lanceolate, pointed bracts. *Sepals* : broadly ovate, the lateral ones reflexed. *Petals* : smaller than the sepals ; oblong, or wedge-shaped ; mostly toothed. *Lip* : very deeply and delicately fringed and projecting a long, slender spur. *Leaves* : lanceolate, acute at the apex and clasping at the base ; thick ; smooth ; the upper ones much reduced in size. *Stems* : one to three feet high ; leafy ; smooth.

Through wet meadows and in woods, sometimes even venturing to the dry, packed soil of mountain roads this handsome orchid appears as one of the treasures of late summer. Its personality is always distinctive, although in colour its blossoms vary from a deep, rich orange to a pale, almost indefinite tint. A wet meadow where these plants grew in abundance presented to my mind the effect of its being traversed by a brilliant flame ; but in the mountainous districts where they often occurred in dry soil, I noticed that they were mostly very pale. The yellow fringed orchid is one of the plants that appeals strongly to the native mountaineers who respect it as a rattlesnake's master. In its deeply fringed lip they claim a resemblance to the forked tongue of the snake, while the anther sacs represent to them his fangs. But although staunchly asserting the efficacy of various plants in this cause the conscientious native, when asked if he would rely on one for his own cure, usually answers : " Wall no, I'd take whiskey."



PLATE XXIV. RAGGED ORCHID. *Habenaria lacera*.
(77)

H. ldcera, ragged orchid (Plate XXIV), grows at times as high as two feet. It is a slender plant with lanceolate, firm-looking leaves and a spike of loosely arranged, greenish yellow flowers. They have a ragged, unkempt looking lip divided into three narrow segments, the fringe of each being long and thread-like. The other petals are entire and linear, while the spur is dilated and curved. At their apices the broad sepals are quite blunt. The larger of the bracts which subtend the flowers measure about an inch long and when young are of a vivid, intense green.

H. cristata, crested yellow orchid, which is found in bogs and swamps from Louisiana and Florida to New Jersey, is also a tall and slender species. Its oblong spike is from two to four inches long and bears many small orange coloured flowers, which, were it not for the brilliancy of their colour, would be quite overshadowed by their long, lanceolate and very green bracts. All about the lip is bordered with a delicate, fine fringe which occurs slightly on the other petals, or they are jagged at their summits. The lower leaves are linear-lanceolate, seven or at most eight inches long, while the upper ones are small and similar to the bracts.

H. Michauxii is, perhaps, the most eccentric appearing member of the genus, a circumstance brought about by the phenomenal length of the spur, it being often quite two inches long. Indeed these strange little white flowers have a look as though they might fly in the air, as though like kites they were provided with tails. The lip near its base is parted into three segments, the lateral divisions being longer and narrower than the middle one. The lower lobes of the petals are also linear or thread-like, and twice as long as the upper ones while the ovate sepals are pointed at their apices. In August the plant is found in blow through the wet pine lands of Florida and it extends as far northward as North Carolina. Late in the autumn its oblong, or ovate leaves turn to varied shades of red and orange.

H. nivea, southern small white orchid, grows also in moist pine barrens. It is a dainty plant, tall and slender with linear leaves and an oblong close spike of white flowers, the sepals of which are oblong and somewhat enlarged at their bases, while the spurs are very slender and as long or longer than the ovary.

H. clavellata, small green wood orchid, bears flowers which are quite as often a pure waxy white as they are green. The plant is seldom found much over fifteen inches high and bears usually but one large stem leaf which is oblanceolate. The smaller ones which appear above this leaf are similar to bracts. The sepals and petals of the flowers are ovate and their arrangement is such that they have an attractive wing-like appearance. At its apex the lip is inconspicuously three-toothed and the projected spur is incurved and club shaped. On the high mountains of the Appalachian system

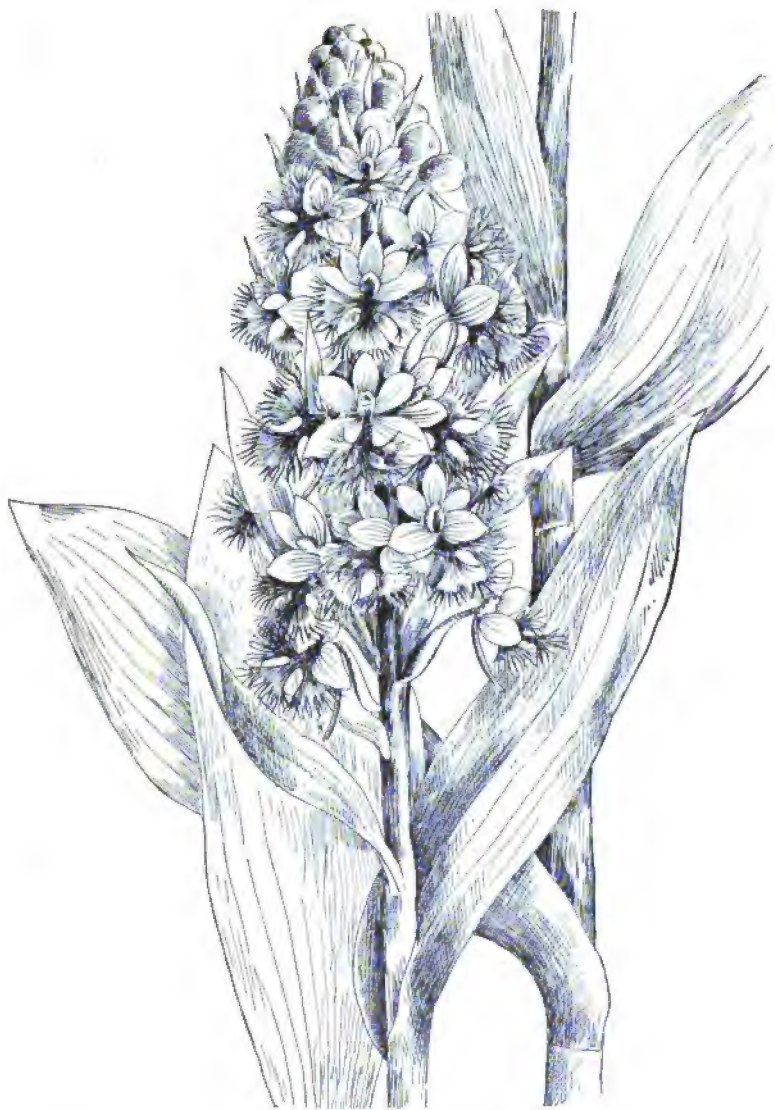


PLATE XXV. LARGE PURPLE-FRINGED ORCHID. *Habenaria grandiflora*.
(79)

and in moist, wooded places where perhaps trails a small stream the plant grows well. Its range from Florida and Louisiana extends northward to Newfoundland.

H. flava, small pale green orchid, is readily known by its long, loose spike of tiny green flowers and their large sharp-pointed bracts. The sepals are greenish yellow. The lip which is but little longer than the other petals is a strange formation having two blunt side teeth, and is well worth placing under a microscope. Sometimes the plant grows as high as two feet. It has a leafy stem, the foliage being lanceolate, oval or elliptical, thin and smooth.

H. grandiflora, large purple-fringed orchid, (*Plate XXV.*) is the largest and handsomest of the group of so-called purple-fringed orchids, and undoubtedly one of our most regal wild flowers. Its abundant inflorescence of a bright, pinkish lavender is exceedingly showy. Often the lip occurs quite an inch long in robust plants. It is three-parted, appearing fan-shaped and is terminated by a deep, delicate fringe. Backward it extends into a long, slender spur. The upper sepals and petals are erect, the latter slightly toothed. Occasionally these beautiful flowers are heavily fragrant and occur also in an almost white form. The leafage of the stem is oval or lanceolate and blunt at the apices. From one to five feet high the plant grows and from June until August throws out its bloom. It probably does not extend further southward than North Carolina.

H. psycodes, small purple-fringed orchid, is very like, but smaller than the preceding plant; its racemes being seldom over six inches long and always marked by a faint fragrance. In meadows and swamps it grows, greatly, it would seem, preferring the latter and at an ascent in North Carolina of 6,000 feet.

H. peramèna, fringeless purple orchid, (*Plate XXVI.*) is found in moist meadows, or by the borders of mountain streams from Kentucky and Virginia northward to New Jersey. It is a plant tall and striking in appearance, although the flower's lip has not the delicate fringe which makes so attractive its near relatives. This part, however, is deeply divided into three spreading, fan-shaped segments, the middle one being the larger and having two lobes, which, at their summits, are irregularly toothed. The elliptical, or lanceolate leaves sheathe the stem at their bases. Those near the flowers are very small.



PLATE XXVI. FRINGELESS PURPLE ORCHID. *Habenaria peramena*.
(81)

WHORLED POGONIA. (Plate XXVII.)*Pogonia verticillata.*

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Orchid.	Greenish, yellow and purple.	Scentless.	Florida to Ontario and westward.	April-June.

Flowers: terminal; solitary; erect or declined. *Sepals:* one and a quarter to two inches long; spreading. *Petals:* shorter than the sepals; oblong; erect, blunt at the apex. *Lip:* three-lobed, crested along a narrow line. *Leaves:* five; growing below the flowers in a whorl at the summit of the stem; oval or obovate; abruptly pointed at the apex and tapering at the base; sessile; parallel-veined; thin; smooth. *Stem:* eight to twelve inches high.

Through the early spring this one of the orchids is sometimes found almost hidden in shady ravines and deep, moist woods. Its flowers have rather a strange and rakish air from the unusual length of their sepals; a feature, however, not unusual in the genus, although some other members have the sepals and petals alike. Another mark of the pogonias is that they mostly all have a crested and three-lobed lip.

P. divaricata, spreading pogonia, bears also a scraggly looking flower as its three linear and divergent sepals, which are a deep, reddish purple, are considerably longer than the flesh coloured and lanceolate petals. The middle lobe of the lip is somewhat longer than the other two and is crested and crenate about its edges. In foliage the plant resembles the rose pogonia, the upper bract-like leaf, however, being quite long and linear. From April until July the plant is considerably seen through the swamps of Florida and from there it extends northward to New Jersey.

P. ophioglossoides, rose pogonia or snake-mouth, is a sprightly, quaint looking little plant. Usually it grows from five to seven inches high, although it is known to occur taller.

But two leaves are developed, one about midway on the stem while the other, which is smaller, appears just below the flower. In reality, this

*Rose Pogonia.*



PLATE XXVII. WHORLED POGONIA. *Pogonia verticillata*.
(83)

latter is a bract. Both are sessile and oblong, or lanceolate. The flower is but slightly inclined; of a pale rosy colour and faintly fragrant as are red raspberries. Its spatulate lip which is fringed about and gaily crested with yellow is longer than the other petals and sepals. They are oval, and, as with the following species, all about the same size. The plant spreads itself by runners. In the latter part of May after a long and disappointing hunt through wet meadows and swamps where the rose pogonia usually grows, I found a small one that had strayed to the roadside's edge and there grew contentedly in dry, hard packed soil.

P. trianthophora, nodding pogonia, (Plate XXVIII), is a little beauty, which although indigenous from Florida to Rhode Island and westward is still a rare find through the woods of midsummer. In general it bears three small, slightly tinted white flowers which are erect when young, but soon nod from their slender, axillary peduncles. So quaint and dainty are these blossoms that they have tempted the usually unresponsive mountaineers through the Alleghanies to indulge in a bit of sentiment. They call the plant, "the three birds." In construction the flowers show the traits of the pogonias, the clawed lip, however, is not crested, although rather rough on its face. It is slightly three-lobed. The leaves are small, alternate and broadly ovate. On taking up one of these plants the tuberous root appeared to me as a revelation. Like a small peanut it was in shape, perfectly white and almost transparent.

NODDING LADY'S TRESSES. (Plate XXIX.)

Gyrostachys cernua.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Orchid.	White, or yellowish.	Fragrant.	Florida and Louisiana northward and westward.	August-October.

Flowers : slightly nodding, and growing closely in a spiral way on an untwisted stem. *Bracts* : lanceolate; arched; pointed and pubescent. *Lateral sepals* : slender and somewhat pubescent on the outside; the upper one, arched. *Lip* : oblong; rounded and crisped at the apex. *Leaves* : those near the base, linear or linear oblong, bluntly pointed at the apex and tapering at the base into a long sheathing petiole. Occurring on the stem also are several small, sharply-pointed bracts. *Stem* : usually eight to ten inches high, or occasionally as tall as two feet; pubescent especially near the summit.

There is a charm about the tall, sprightly form of this orchid as in its wild state it appears suddenly and seems to form a part of the woodland scene or moist strip of country through which it grows. Happily it is one of the commonest of the genus, and lingers in bloom until late in the season, being in fact the last of the orchids to be sought for. In the well known gorge, between Hampton and Roan Mountain station, Tennessee, I was delighted to find a notable specimen. It grew in a mossy, damp place within the



PLATE XXVIII. NODDING POGONIA. *Pogonia trianthophora*.
(85)



PLATE XXIX. NODDING LADY'S TRESSES. *Gyrostachys cernua*.
TWISTED ORCHID. *Gyrostachys brevifolia*.
(86)

shade of a purple-flowering raspberry. Very dense was its spike of bloom, a little over eight inches long, while the fragrance it exhaled told of its presence.

The spiral or one-sided arrangement of such small, white flowers is usually a mark distinctive enough to relegate them to this genus.

G. brevifolia, twisted orchid, (Plate XXIX), blossoms through October and November in the pine barren swamps of western Florida. To the botanist it is interesting from its apparent lack of foliage and the one-sided, regular way in which the small flowers grow, an effect produced by the twisting of the spike. Occasionally near the base is discerned a linear-lanceolate leaf about an inch and a quarter long, or again, as it shortly withers, the stems are destitute of all leafage excepting their close bracts.

G. gracilis, slender lady's tresses, bears its white flowers also on a much twisted spike which makes them appear one-sided. They are very small, the perianth being hardly more than a quarter of an inch broad. The tiny lip is crisped and slightly marked in the middle with green. The basal leaves are from a half to an inch and a half long, obovate, and at their base taper into petioles. Very early in the season they wither, leaving only the small, also deciduous bracts. According to its location, for the plant has an extended range, it may be found in bloom from April until October.

G. praeox, grass-leaved lady's tresses, a slender plant, is known by its fine, linear leaves which grow near the base of its stem, and the bracts above them which are close and scale-like. On the much twisted spikes are many small, white, or yellowish flowers. There is a short claw to the lip which latter organ is crenulate at its summit, and through the centre often striped with a darker colour. In Florida the plant blooms in April while as far northward as New York it delays until July.

DOWNY RATTLESNAKE PLANTAIN. (Plate XXX.)

Perdium pubescens.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Orchid.	Greenish white.	Scentless.	Florida and Tennessee northward to New Foundland.	July, August.

Flowers: growing from all sides of a bracted spike and at the summit of a scape which bears several small leaf-like scales. *Lateral sepals:* free; ovate; the upper one united with the two petals and forming an ovate galea. *Lip:* sessile; sac-like; entire; the tip recurved. *Leaves:* tufted about the base; oval or ovate, pointed at the apex and extending into margined petioles; entire; conspicuously veined with white. *Scape:* six to eighteen inches high; densely pubescent.

On the faces of these little flowers can be read nothing but thoughts of beauty, and of the modesty of their design; but with the strange-looking leaves it is different. Their curious blotching and veining with white gives them an uncertain air, and moreover they have for a long time, through



PLATE XXX. DOWNY RATTLESNAKE PLANTAIN. *Peramium pubescens*.
KIDNEY-LEAF TWAYBLADE. *Listera Smilli*.
(88)

their supposed likeness to the skin of a rattlesnake, been associated with that creature. In fact, all through the mountainous regions of the south the natives affirm their belief in these leaves as an unfailing cure for the bites of snakes, a tradition which has in all probability been transmitted to them through the slaves in the cotton belt.

In the mountains of North Carolina where this plant frequently ascends to an elevation of 4,000 feet above the sea there is also a form of *Peramium repens*, a species known as a native of boreal and arctic Europe, and Alpine and more northern stations in America. From *Peramium pubescens* it may be distinguished by its strictly one-sided spike. It is the *Peramium repens* variety *ophioides*.

KIDNEY-LEAF TWAYBLADE. (Plate XXX.)

Listera Smilli.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Orchid.	Greenish.	Scentless.	Maryland, Virginia and North Carolina.	June.

Flowers: very small, growing in a slender raceme from one half to four inches long. *Bracts*: tiny; lanceolate. *Sepals*: reflexed; linear, or linear-oblong. *Lip*: wedge-shaped; deeply cleft at the apex, the sinus being V-shaped, and having two prominent teeth near the base. *Leaves*: two only; opposite and growing about midway on the stem; sessile; reniform; abruptly pointed at the apex and cordate or sub-cordate at the base, the mid-vein projecting a minute point; slightly pubescent underneath. *Stem*: four to twelve inches high; erect; slender; densely pubescent on the upper part. *Roots*: long; thread-like.

It is more as a curiosity than anything else that this little orchid receives attention, for in appearance it is most insignificant. In damp mountainous places where it grows the eye must indeed be alert to see it at all, while under the great rhododendron thickets, where perhaps it loves best to hide, one must descend to hands and knees and search for it in that way.

L. australis, southern twayblade, is found in bogs and wet places from Louisiana and Florida to New York. Its tiny, yellowish green flowers are delicately striped with purple. The sepals and petals are extremely small, but the lip is much larger than they, although at most it measures but half an inch long. Nearly to the base it is cleft into two linear segments. The two opposite leaves below the raceme are ovate and lustrous.

LARGE TWAYBLADE. (Plate XXXI.)

Leptorchis liliifolia.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Orchid.	Dull lilac or pinkish brown.	Scentless.	Georgia to Maine and westward.	May-July.

Flowers: showy; growing in a terminal raceme on an angled scape from four to ten inches high. *Sepals* and *petals* reflexed, the latter thread-like. *Lip*: large;

erect; somewhat obovate, and uneven on its edges. *Column*: incurved. *Capsules*: erect. *Leaves*: two only; oval; mostly obtuse at the apices and sheathing the scape at their bases; entire; thin, shiny. *Root*: a bulb.

Among many forms of growth which had gained a footing in earth-filled niches of high, towering rocks, through the rugged wilds of western North Carolina, I found at the base of an old tree this interesting one of the orchids. Its raceme of graceful flowers had then faded and its thin leaves had turned from their usual tint of pale apple-green to a shade of yellow, quite in harmony with the young capsules. A few of these latter had already opened and were dispersing their powdery seeds. Earlier in the season, even while the bloom is in the prime of its beauty, I have sometimes noticed that these leaves show tints of vermillion and orange.

GREEN ADDER'S MOUTH.

Achrodanthes unifolia.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Orchid.	Greenish.	Scintless.	Florida and Alabama to New Foundland and westward.	July.

Flowers: small; growing on thread-like pedicels in a terminal raceme from one to three inches long. *Sepals*: oblong; spreading. *Petals*: thread-like, shorter than the sepals. *Lip*: broad; three toothed. *Leaves*: broadly ovate, or approaching orbicular; bluntly pointed at the apex; entire; thin; smooth, clasping the stem near the middle. *Stem*: four to ten inches high; smooth.

That orchids are not always beautiful is well exemplified by this rather poor looking plant which contributes but little to the beauty of the woods and thickets where it grows. As we know, however, many such are of botanical interest as showing various forms of structure and making comparisons possible between the high and lowly of the same family.

CALOPOGON, GRASS PINK.

Limodorum tuberosum.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Orchid.	Magenta pink.	Fragrant.	Florida and Missouri to New Foundland.	May-July.

Flowers: large; showy; a few growing loosely in a spike at the end of a slender scape twelve inches to two feet high, and being subtended by minute, pointed bracts. *Sepals* and lateral petals somewhat similar; spreading; ovate-lanceolate. Owing to the fact that the ovary is not twisted, the lip which is raised by a narrow stalk remains on the upper side of the flower. It is triangular or broadly obcordate, and beautifully crested with rose-coloured, orange and white hairs. *Leaves*: linear-oblongate; pointed at the apex and sheathed near the base of the scape which near the base bears several scales. *Root*: a small bulb.

This one of our orchids with its beautiful and eccentric air usually grows in swampy ground, or peat bogs and has often for its companion the pretty



PLATE XXXI. LARGE TWAYBLADE. *Leptorchis liliifolia*.
(91)

little rose pogonia, or some other of its clan. As the name *Calopogon* signifies, its lip is exquisitely bearded with gay colours which act as a lure, no doubt, to hungry insects. It is also a very different structure from the lips of many other orchids, such for instance, as the *Cypripediums*. Rather than being a pouch it forms a sort of arched roof, and owing to its position on the upper side of the flower gives it something the appearance of being upside down. So lightly attached is this curious structure that it can be lightly moved up and down by the finger, much as though it were on a hinge.

L. multiflorum bears many more flowers than does the grass pink although they are not so large, being more the size of those of *L. parviflorum*. The bracts, however, that subtend them are somewhat longer than those of these species. From western Florida to the coast of Alabama the plant occurs and is somewhat of a rarity. It is moreover very beautiful. So kindled, in fact, was Dr. Chapman's enthusiasm concerning it that in his eighty third year he walked thirteen miles to see it growing in its native habitat.

L. pallidum produces but one linear leaf and a scape with sometimes as many as twenty white flowers which are tinted with purple. It is tall and slender. Near the coast it grows from Florida to North Carolina being mostly found in wet pine barrens.

L. parviflorum grows in similar places and is a very slender species, its linear leaf being almost thread-like. On the scape the bright purple flowers number from three to six and as early as March they come into bloom.



Limodorum tuberosum.

LARGE CORAL-ROOT. (Plate XXXII.)

Corallorhiza multiflora.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Orchid.	Brown and purplish.	Scentless.	Florida and Missouri northward and westward.	June-September.

Flowers: growing on short pedicels in a loose, terminal raceme on a purplish scape from eight to twenty inches high and naked with the exception of a few, close scales. *Sepals and petals*: similar; narrowly lanceolate. *Lip*: purplish white; ovate; spurred deeply; three-lobed, the middle one being broader than the others and crenulate on the margins. *Capsule*: oblong, drooping. *Leaves*: none. *Rootstock*: much branched and toothed in a way similar to coral.

No blaze of colour ever comes from this genus; its members are among the modest, unpretentious ones of the great order, *Orchidaceæ*. But snug-



PLATE XXXII. LARGE CORAL-ROOT. *Corallorhiza multiflora*.
(93)

gling among the soft tints of midsummer, they arise as curious individuals ready to pique the interest of the flower seeker. They have all purplish scapes and until late in the season when often they are surrounded by dead leaves they stand erectly; several of them frequently growing together. Among the number which have specific differences are :

C. odontorkiza, small flowered coral-root, which occurs from Florida and Missouri to Massachusetts may be known from the preceding species by its smaller size and because its oval lip is entire, or but very slightly toothed. In North Carolina where it grows on the high mountains, the people make quite a little revenue from gathering its coral-like rootstock which they sell to chemists.

C. Corallorkiza, early coral-root, is also a small plant of from five to twelve inches high. From the north it extends southward to Georgia and is mostly an inhabitant of the mountains. It blooms in May and June. The flowers are yellowish, or dull purple and grow on very short and minutely bracted pedicels. The twice-toothed lip is noticeably shorter than the other petals.

CRESTED CORAL-ROOT.

Hexaléctris aphyllus.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Orchid.	Dull purplish.	Scentless.	Missouri and Florida to South Carolina.	July-September.

Flowers: large; growing on very short pedicels in a loose raceme at the end of a stout scape, ten to twenty inches high and bearing a number of purplish scales, the upper ones being lanceolate. *Sepals and petals*: similar; narrowly oblong; pointed or blunt at the apex and marked with purple lines. *Lip*: short; obovate; broad; slightly three-lobed, the middle one being the longer, rounded and crenate; crested. *Leaves*: none. *Rootstock*: fleshy, branched similar to coral.

Through southeastern America and Mexico this plant is monotypic of its genus. It grows in rich, shaded soil, and the flowers with their crested lips are rather pretty.

ADAM-AND-EVE. PUTTY-ROOT.

Aplectrum spicatum.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Orchid.	Dull yellow and purple.	Scentless.	Florida and Georgia to Ontario and westward.	May-September.

Flowers: growing loosely on short pedicels in a raceme at the end of a smooth scape, twelve inches to two feet high and which is clothed with three or more slender and membranous scales. *Sepals and petals*: similar; linear-lanceolate. *Lip*: clawed; shorter than the other petals, slightly three-lobed and wavy on the margins. *Column*: curved. *Leaf*: one only, arising in the late autumn from the corm; oval or elliptical and tapering at the base into a margined petiole.

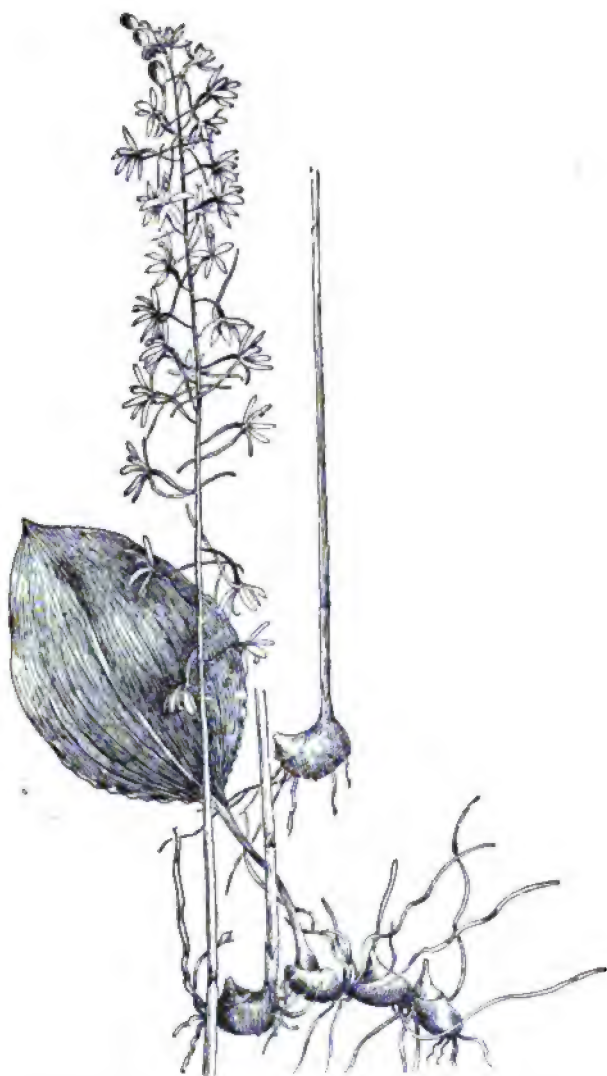


PLATE XXXIII. CRANE-FLY ORCHID. *Tipularia unifolia*.
(95)

Although the spurless flowers of this plant are not at all showy there is still considerable interest attached to it as being the representative of a monotypic genus. A single leaf it bears, which comes up late in the autumn, remains green and full of life through the winter, or until the plant in the spring puts forth signs of flowering. Then it dies down to the corm. With *Tipularia unifolia* this is also a characteristic and is illustrated in Plate XXXIII. Another curious point is that when the plant is uprooted there are found to be as in a chain several old corms attached in succession to the one of the present season. It was perhaps a young plant that had borne but two which suggested to the donor of its popular name, Adam and Eve, hand in hand. The name putty-root is in reference to the thick cement-like substance within these corms and which has been used to fill up crevices.

CRANE-FLY ORCHID. (Plate XXXIII.)

Tipularia unifolia.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Orchid.	Green striped with purple.	Scentless.	Louisiana and Florida to Virginia and westward.	July, August.

Flowers : growing on thread-like pedicels loosely in a bractless raceme on a smooth, pale green scape of from ten to twenty inches high which arises from a bulb and is sheathed at the base with several scales. *Sepals and petals* : linear, spreading. *Lip* : equalling or shorter than the petals; three-lobed; the middle lobe, long, narrow and projected into a very long, slender spur which is straight, or but slightly curved. *Leaf* : one only, arising from a separate lateral bulb and appearing late in the autumn; ovate, pointed at the apex and tapering at the base into a sheathed petiole; entire or slightly puckered on the margins.

Although in the mountains of Himalaya there is another species known to exist, this plant is the only American representative of the genus. It is, moreover, rare and local and when found is usually growing in soil that is shaded and moist. It is a strange-looking plant; the flowers resembling scrawny insects whose generic name is *Tipula*. After the plant has apparently perished in the autumn, one dark green leaf springs up and lasts over the winter. Often it is quite attractive, mingling on its surfaces bright shades of red and purple, but never is it seen at the same time as the flowering scape.

Blétia Verecúnda.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Orchid.	Dark green.	Scentless.	Southern Florida.	July-October.

Flowers : numerous; quite large; growing in a raceme at the end of a lateral scape often three and a half feet high, and clothed with several sheathing, membranous bracts. Bracts of the inflorescence one half to one and a half inches long, linear. *Sepals and petals* : spreading, similar; the former lanceolate, the latter

shorter and obtuse. *Lip* : three-lobed, the middle one of which is reddish, purple and crested. *Leaves* : usually three ; from the base ; sheathed, linear-lanceolate ; pointed at the apex and tapering at the base. *Rootstock* : tuberous.

This *Bletia*, a curious enough little plant and the only representation of its genus through our range is also strongly illustrative of one of the orchid's peculiar traits. In all the species, as in the milkweeds, the pollen grains are concentrated into tiny masses, called pollinia. Sometimes they are in pairs of two or four, or again as in our present plant there are eight waxy masses. Later these become powdery and are connected by most filmy, elastic tissues.

TREE ORCHID.

Epidendrum conopseum.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Orchid.	Purplish green.	Scentless.	Florida to South Carolina.	August.

Flowers : growing loosely on thread-like pedicels in a long raceme at the end of a tall scape. *Bracts* : linear, pointed. *Sepals* : oblanceolate ; spreading ; petals similar, narrower. *Lip* : clawed ; three-lobed ; the middle one notched at the apex. *Leaves* : one to three, sheathed near the base of the scape ; linear-lanceolate ; about two and a half inches long ; thick. *Roots* : spreading ; much branched.

From the wild orchids that have already been mentioned this one is very different, belonging as it does to the group which cling to the branches of trees through their spreading and matted roots. On such notable individuals of the south as the magnolias it loves best to grow, although near Jacksonville I saw it also, hanging from a great live oak by the river, and on which the little thing had apparently found some difficulty in finding much bark not already monopolised by the long moss.

E. vendsum, which also grows on trees, is a much larger plant than its relative ; its leaves being often eight inches long, and the flowering scape as high as two feet. Near its base the scales are very membraneous and in colour ashy grey.



THE LIZARD'S TAIL FAMILY.

Saururacæ.

LIZARD'S TAIL. (Plate XXXIV.)

Saururus cernuus.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Lizard's tail.	Cream-white.	Fragrant.	Florida to Connecticut along the coast, and westward.	May-August.

Flowers : minute ; incomplete ; growing densely in an axillary, curved spike, on



PLATE XXXIV. LIZARD'S TAIL. *Saururus cernuus*.
(98)

a long, smooth peduncle. *Perianth*: none. *Stamens*: six to eight, spreading, their filaments thread-like. *Leaves*: alternate, with petioles which sheathe the stem at the nodes; cordate, deeply so at the base and long pointed at the apex; entire; thin; palmately five to nine ribbed; glabrous at maturity. *Stem*: two to five feet high; branched towards the summit; jointed.

Growing in the shallow water of marshes or by the ponds' side there is hardly a more attractive plant than the lizard's tail, although when a solitary one is found it needs to be looked at closely before its full beauty is seen. As, however, many of them raise together their tail-like spikes of fluffy, fragrant bloom the effect they produce is charming, and each spike endures for several days. There is but one other member of its genus, a native of Asia. In aquatic gardens the eastern American species is largely cultivated.



THE WALNUT FAMILY.

Juglandaceæ.

Including trees with compound, alternate leaves which have odd-pinnate and nearly sessile leaflets and which bear monœcious, inconspicuous flowers; the sterile ones of which grow in drooping aments while the fertile ones are clustered, or solitary. Drupes: large.

BLACK WALNUT.

Juglans nigra.

FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
Walnut.	Rounded.	30-60-150 feet.	Texas and Florida northward to Massachusetts and westward.	April, May. Fruit: October.

Bark: blackish; rough with broad ridges. *Twigs*: pubescent. *Leaves*: with slightly pubescent stalks from one to two feet long. *Leaflets*: thirteen to twenty-three; ovate-lanceolate, taper-pointed at the apex and rounded or slightly cordate at the base, the sides often unequal and the lower pair being smaller than the others; sharply toothed; yellowish green above and glabrous, paler below and pubescent. *Staminate aments*: long and thick, axillary in the leaf scars of the preceding year. *Fruit*: large; globose; usually solitary, the husk greenish yellow when ripe and dotted with brownish red; spongy and decaying to release the nut. *Nut*: black; deeply and sharply furrowed, and containing a rich, highly flavoured kernel.

There are few trees indeed that hold a more assured place in the plant world than the black walnuts. In personality they are attractive with foliage which is noticeable from the odd-pinnate growth of its leaflets; their nuts are abundant in a richly flavoured, oily meat; while in commerce their

timber has been of such inestimable value that it is fast becoming exhausted throughout the country.

In West Virginia there is clinging to this tree a bit of folk-lore which asserts that no weeds will grow under its shade. It is therefore in such places that the people are prone to seek their best sods. In explanation of this curious fact it has been suggested that as the tree flourishes in unusually rich soil, the grass about it is sufficiently lusty to choke out any weeds that might there venture to spring up. Had the tree been protected by some such myth as that of its being inhabited by a spirit, one not unusual in ancient lore, it would probably not have been so recklessly destroyed by the axe as has been the case during the last century.

J. cinerea, white walnut, oil-nut or butter-nut, is a tree of smaller size than the black walnut and from which in one way it can always be known by the dissimilarity of its fruit. Within an oblong, pointed husk densely viscid and disagreeable to the touch its nut is enclosed. The shell moreover is very rough and vertically ridged. The under sides of the leaves retain always their pubescence, and even at maturity there are sometimes traces of it to be seen on their upper surfaces. When very young these leaves are almost a pale yellow, but become as they grow older a deep green. Through the south it would seem that the tree is most generally called white walnut, while northward it is best known as the butter-nut.

NUTMEG HICKORY. (Plate XXXV.)

Hicoria myristiciformis.

FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
Walnut.	Crown, open, narrow.	80-100 feet.	Alabama to South Carolina.	April.

Bark: brownish red; broken irregularly into thin scales. *Leaves*: odd-pinnate, with five to eleven obovate or ovate-lanceolate, almost sessile leaflets, pointed at the apex and squared or rounded at the base, the terminal one wedge-shaped and having a very short petiole; serrate; at maturity glabrous above, silvery white and very lustrous below; when young, covered underneath with a reddish pubescence. *Fruit*: enclosed within an oval, or oblong thin husk; four ridged and splitting when ripe to the base; scurfy pubescent. *Nuts*: oval; smooth, reddish brown and mottled with grey. *Kernel*: sweet.

Although this tree resembles in growth the pig-nut hickory it is far more beautiful, the under surfaces of its leaves being so highly lustrous as to add an intense charm to its foliage. It is very local, but through different sections of the country has been found to flourish in various kinds of soil. In the calcareous soil of Alabama, and in Mississippi towards the central part of the state it grows splendidly and is apparent in thick forests. That, in 1894, Dr. Charles Mohr traced it to its haunts in the latter state was through the coincidences of his having first seen its nuts among an exhibit from Missis-

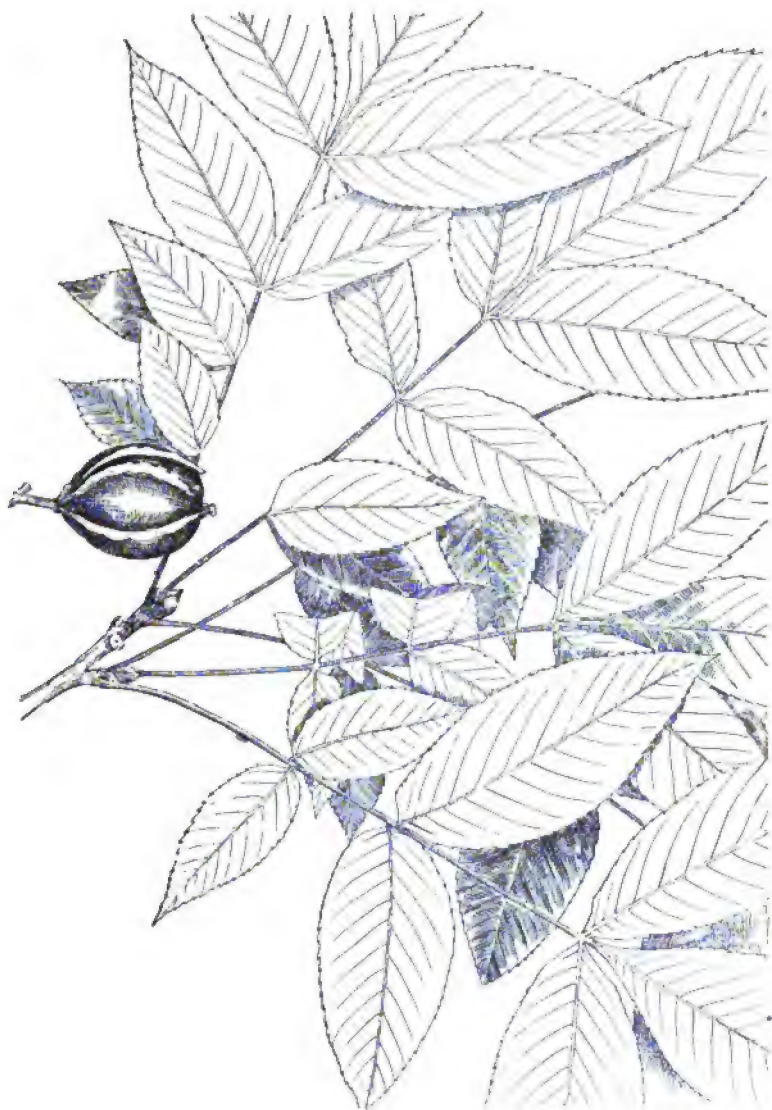


PLATE XXXV. NUTMEG HICKORY. *Hicoria myristiciformis*.
(101)

missippi at the New Orleans exhibition in 1884, and because ten years later he passed in the state a group of children who held them in their hands. In 1845 it had been discovered by Fremont west of the Mississippi, and before that time in South Carolina. This fruit has not at all the look of conventional hickory nuts but appears quaint and more like small nutmegs. The tree's wood is hard and closely grained.

H. alba, mocker-nut, white heart hickory, or fragrant hickory as it is latterly called from the fragrance of its nuts and pubescent foliage, ranges from Florida to Ontario and westward. It bears large thick shelled nuts, the kernels of which are pleasantly flavoured. The tree is tall, sometimes attaining a height of one hundred feet. Its bark is rough but close and it has mostly five lanceolate-oblong leaflets.

About the wood produced by various hickories, a genus which notably belongs to North America, the trees being, as far as our present knowledge extends, indigenous in no other country, there is much that is similar, and they are among the most valuable the world over. In strength and tenacity this wood is unexcelled; but it is also liable to decay when exposed to the atmosphere and for this reason is little used in building. For such purposes, however, as the teeth in rakes where strength alone is required it is of service. American axe handles made of hickory are of worldwide renown as are the trotting sulkies for the construction of which no other wood combines sufficient strength and lightness. On the hearth also, there is none other wood to compare with that of the hickories which produces an intense heat and coals that are heavy and long-lived.

H. ovata, the shag-bark or shell-bark hickory, called also white hickory, is too well known and appreciated to need much description. Its shaggy bark, separating as it does into long plates which at both ends curve away from the trunk while remaining attached at their centres, is its most individual trait. The nuts also are those of greatest renown among the genus. Through the higher Alleghanies the tree attains fine proportions and is truly an imposing spectacle when seen against a sky of intense blue.

H. laciniata, big shag-bark or king-nut, is noted for the truly great size of its nuts, their thick husks being often two and a half or three inches long. To the base they split cleanly in four sections. Their shell is pointed at both ends, angled and quite uneven on the outside. It is besides thick and of a dark, yellowish colour. Although sweet, the meat is less agreeably flavoured than that of *Hicoria ovata*. This tree with its seven or nine characteristic leaflets is rather rare and has Tennessee and North Carolina as the limit of its southern range.

H. Carolina-septentrionalis, with its slender spray of well formed foliage is another attractive individual. Its leaflets, which usually number five, are

sessile with the exception of the terminal one, and ovate-lanceolate in outline. At maturity they are bright green above, paler below, smooth and lustrous on both sides. The husks of the fruit are almost globose, relatively thin, and when ripe split in four sections to nearly the base.

H. glabra, pignut or broom hickory, is an especially well known tree; for who, when it is in fruit, has not at some time confused its nuts with those of the faithful old shag-bark and learned by experience the lesson of their differences, those of the unfortunate pignut being so bitter and astringent as not to be edible. The tree is perhaps the most prominent of the group of so-called thin-shelled hickories. Its fruit is thin-shelled, smooth, without ridges and tapers to a point at the apex. The husks, also smooth, split open when ripe, but only to about their middle. The leaves have from three to seven oblong, or lanceolate and smooth leaflets.

H. minima, swamp hickory, or bitternut, a light slender tree of usually beautiful proportions, bears from seven to nine lanceolate leaflets and thin shelled, smooth nuts which end abruptly in short points. Their seeds are intensely bitter.

H. villosa, (Plate XXXVI), is one of the common hickories of the southern Alleghanies, its range extending from Missouri to Alabama and Georgia. This tree in Missouri, however, was regarded by Professor Sargent at one time as being simply a variety of the pignut, *Hicoria glabra*. Over its leaves there is a downy pubescence which on its leaf-stalks takes a decided tufted character. The shells of the nuts are thick, the kernels sweet, and as has been observed by Professor Sargent, the tree bears "remarkably small buds."

H. aquatica, water hickory or bitter pecan, with its nine to thirteen lanceolate leaflets, shows sometimes the unusual feature of their curving in crescent, or scythe-like shapes. The fruit's husk is ovate, angled, somewhat flattened, and almost smooth. When opened it is found that the nut's shell is thin and rough. It is also four-angled. The kernel is intensely bitter and when eaten greatly puckers the mouth.

H. Pecdn, the pecan which within our range is a native, prefers to grow in moist soil, usually that along the stream's bank. At most it attains a height of one hundred and seventy feet and is slender and graceful with a bold and handsome crown. Its leaves bear from eleven to fifteen oblong-lanceolate leaflets, with very short petiolules, and on their undersides there are still at maturity traces of an early, rusty pubescence. The smooth, oblong-cylindric nuts, enclosing their delicious meat are the ones so well known in the market. Yearly the demand for them is greater than the supply, and so of late some attention has been given to planting the trees in groves as a source of profit. But he of the lowlands with perhaps six or eight of them



PLATE XXXVI. WOOLLY PIGNUT. *Hicoria villosa*.
(104)

on his sandy domain, his pigs and his scuppernong vine has not yet occasion to fear that uncompromising competition will cause his time of prosperity to vanish. In the old plantation days of the south the pecan was much planted in a formal way. Even now a few lingering ones which once, perhaps, shaded a fine avenue are standing as memorials of their departed companions.



THE BAYBERRY FAMILY.

Myricaceæ.

A group composed of shrubs or small trees with simple, alternate aromatic leaves and monœcious or diœcious flowers which grow in aments. Perianth: none.

CANDLE-BERRY. WAX-MYRTLE. (Plate XXXVII.)

Myrica cerifera.

FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
Bayberry.	Slender.	6-40 feet.	Texas and Florida to Maryland and westward.	March, April. Fruit: October.

Bark: grey, smooth, the young growth marked with many blister-like dots. *Leaves:* oblong-oblancoate; pointed at the apex and tapering at the base into margined, pubescent petioles; entire, or showing a few remote teeth; dark green and lustrous above, slightly pubescent underneath along the ribs; thick; fragrant when crushed, persistent during the greater part of the winter. *Flowers:* diœcious. *Staminate aments:* sessile; cylindric; pistillate ones, shorter and oblong. *Drupe:* small globose; bluish-white, its outer wall being covered with a waxy substance.

In the autumn along the banks of streams, in wet woods, or sandy swamps, or wherever these bushes enliven the landscape they are laden with their waxy fruits. In fact, these curious little drupes when unmolested are often persistent on the plants for two or three years. But there is good reason why they should be gathered and therefore the bushes are often seen completely stripped of their produce. By the natives they are put into boiling water, when the fragrant, waxy substance which covers them arises to the surface as a scum. It is then skimmed off and made into candles, or soap. For a long time these candles burn while emitting a spicy scent. Again the people value the genus because its roots when well boiled have some efficacy in curing headaches.

M. pumila, a low, much branched shrub which inhabits the pine barrens of Florida, is also known by its very small leaves which are entire, or irregularly toothed and cut. They are as well quite thick and persistent. On the



PLATE XXXVII. CANDLE-BERRY. *Myrica cerifera*.
(106)

young stems and branchlets there is a rusty down which also occurs on the under side of the leaves. When the plant is in fruit these woody parts are silvery grey and harmonize well with the small balls of wax-covered fruit.

M. Carolinensis, wax berry, extends from Florida northward to Nova Scotia and is through northern New Jersey a feature of bog life. There, in colonial days, considerable wax was produced from its fruit, a practice which still in New England is more or less prevalent. The shrub attains from two to eight feet high. Its leaves are obovate, or oblanceolate, and mostly entire, although occasionally a few remote teeth are seen above their middle.

WAX MYRTLE.

Myrica inodora.

FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
Bayberry.	Spreading.	6-20 feet.	Florida, Alabama and Mississippi.	February-May.

Bark: whitish. *Branchlets*: reddish brown. *Leaves*: oblong-obovate, bluntly pointed or rounded at the apex and tapering at the base into the margined petiole; entire; often recurved on the edges, thick, lustrous, smooth and sparingly covered underneath with dark, coloured dots. *Drupe*: oblong or ovoid, about the size of a pea, the outer wall only sparingly covered with wax.

It is only very seldom that this rare plant becomes tree-like in its habit. In Florida it grows in swamps near Apalachicola and Argyle; in Alabama it is found in the vicinity of Mobile; and in Mississippi, near Poplarville.

SWEET FERN. (Plate XXXVIII.)

Comptonia peregrina.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Bayberry.	Greenish.	Leaves fragrant.	North California to Nova Scotia and westward.	April, May.

Flowers: monœcious or diœcious, the staminate aments very short and growing near the ends of the branches; the pistillate ones globose and growing on the branches below those which are staminate, in fruit becoming bur-like. *Nut*: light brown; ovoid; shiny. *Leaves*: linear, or linear-lanceolate, with very short petioles, pointed at the apex and taper-pointed or rounded at the base; deeply pinnatifid into rounded or pointed entire lobes; their sinuses being very narrow and pointed; glabrous, shiny. A shrub one to two and a half feet high with wide spread branches.

Over the hillsides in dry soil where this low shrub forms often a close and interwoven growth, it exhales its spicy breath and holds ever its own place in the plant world. It appears vigorous and thus casts abroad an air of refreshment to the traveller over these places who perchance is all the while picking blueberries.

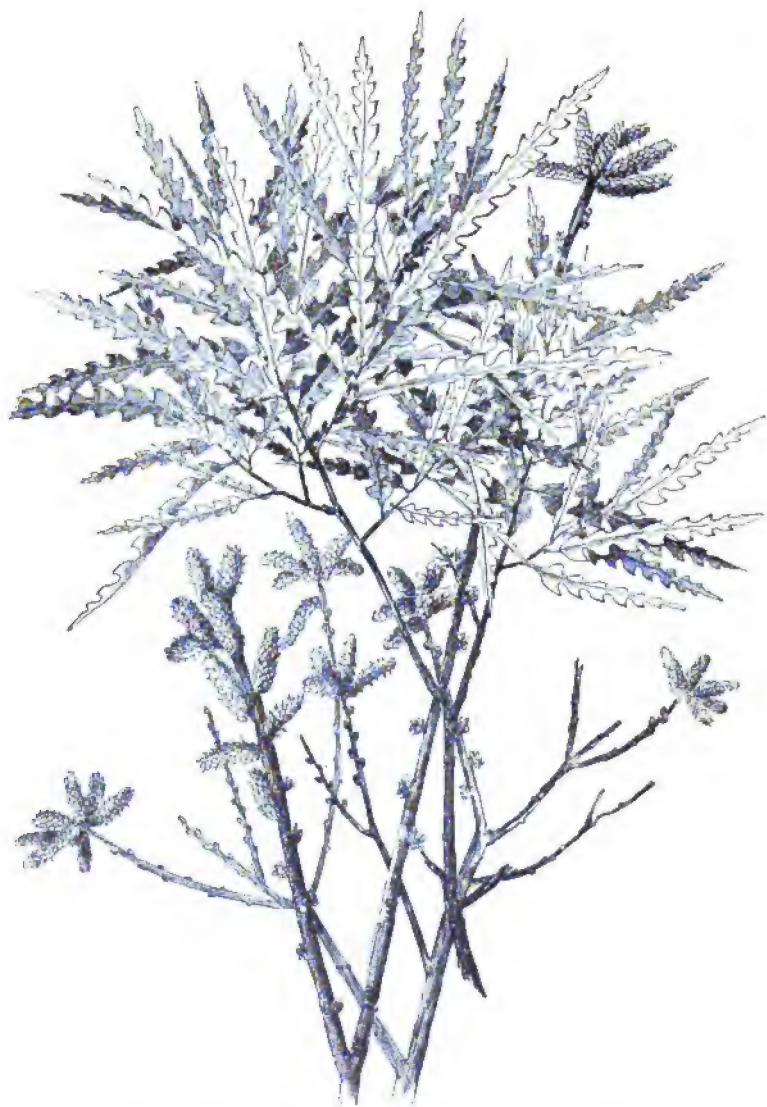


PLATE XXXVIII. SWEET FERN. *Comptonia peregrina*.
(108)

THE CORK-WOOD FAMILY.

Leitneriaceæ.

CORK-WOOD. (Plate XXXIX.)

Leitneria Floridana.

FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
Cork wood.	Bushy.	About 20 feet.	Texas to Missouri and Florida.	February, March.

Bark: greyish, almost smooth. *Young twigs*: deep red, and covered with a close pubescence. *Leaves*: simple; alternate, with long, pubescent petioles; oblong or elliptic-lanceolate, mostly pointed at both ends; entire, olive-green; lustrous above and densely pubescent underneath; the mid-vein very prominent. *Staminate aments*: long, ascending, their conspicuous bracts covered with a silky tomentum and lined with crimson. *Pistillate aments*: short. *Drupe*s: oblong, growing towards the ends of the twigs. A shrub, or small tree.

Of this monotypic genus which intergrades between the bayberries and the willows the cork-wood is the only representative. In salt marshes it grows and imparts to them a fresh and spring-like air when its baby leaves are unfolding.

The wood produced by the plant is in weight the lightest known, more so even than cork.



THE WILLOW FAMILY.

Salicaceæ.

Large trees, or shrubs with simple, alternate, stipulate leaves, and which bear diocious flowers growing in aments.

SAGE WILLOW. DWARF GREY WILLOW.

Salix tristis.

FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
Willow.	Slender.	About 1-2 feet.	Florida and Tennessee northward.	March, April.

Twigs: greyish, or almost black. *Stipules*: early falling, small, linear-oblong. *Leaves*: crowded; one to two inches long with very short, pubescent petioles; linear-oblong or oblanceolate, pointed or blunt at the apex and tapering at the base; entire; green and nearly glabrous above; covered underneath with a dense, white tomentum. *Flowers*: growing in small, sessile aments and appearing before the leaves. *Pistillate flowers*: ovoid; staminate ones with two stamens. Capsule with long beak, recurved. *Seeds*: tufted.



PLATE XXXIX. CORK-WOOD. *Leitneria Floridana*,
(110)

"Willows are weak, yet they bind other wood."

Of inestimable value to the opening season are the willows, for very early they put on their spring dress of silver sheen and thrust out buds of green, or combinations of colour almost too subtle to be accurately described. This fluffy little one of the shrubs which grows through the barren and dry soil of mountains blooms very early in the season; its small rounded aments, as downy and soft as young ducklings, being well developed long before the woolly leaves awake.

S. humilis, prairie willow, grows southward as far as North Carolina and Tennessee. It is also a shrub of from two to eight feet high and has extremely pretty foliage. In outline the leaves, from about two to four inches long, are oblong or oblanceolate and covered underneath as are the petioles with a grey, persistent tomentum. Along the margins they are entire, or slightly denticulate while the tiny stipules are pointed. In April and May, before the leaves are seen, long sprays of both sorts of aments are unfolding. They are short and sessile; the staminate ones casting abroad a golden glow from the protruding anthers, and the pistillate ones showing a silver sheen.

S. sericea, silky willow, which remains always a shrub, is seen along the banks of streams and in swamps as far southward as North Carolina. Its young twigs show vivid colours of purple and red while the unfolding leaves are, owing to their pubescence, a silver-grey. In drying they turn to black, or brown. This species is one which the Indians used largely to make their baskets.

S. nigra, black willow, a slender tree growing sometimes over a hundred feet high, is one of the most variable of the genus in regard to the shape and character of its leaves; often those that are entire and those that are serrate being found closely together. On both sides, however, they are noticeably a bright green. Along streams it mostly occurs, where, as is one of the functions of the willows, it plays an important part in holding the soil together. The roots of this species which are intensely bitter are gathered and made into a decoction for purifying the blood.

COTTONWOOD. CAROLINA POPLAR. NECKLACE POPLAR. (Plate XL.)

Pópulus deltoides.

FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
Willow.	Symmetrical, open crown.	80-100 feet.	Florida to New Jersey and Quebec, also westward.	April. Fruit: June.

Bark: granite-grey; smooth when young but becoming rough and furrowed with age and breaking off in short, flaky pieces. *Branchlets*: greenish. *Leaf-buds*: glutinous, with a substance-like balsam. *Leaves*: with stout petioles which



PLATE XL. COTTONWOOD. *Populus deltoides*.
(112)

are flattened laterally; deltoid-ovate, taper-pointed at the apex and squared at the base. Irregularly and coarsely serrate, with incurved teeth; when young, sticky, fragrant like balsam; occasionally pubescent underneath; at maturity bright green, smooth and glossy above, paler below; ribs whitish on both sides; thick, *Flowers*: dioecious; growing in catkins, and appearing before the leaves; the fertile ones sometimes a foot long; their scales cut-fringed. *Sterile catkins*: growing on stout stems; dense. *Seeds*: covered with a whitish or rusty coloured substance.

We must indeed be up with the early birds to learn in the spring the ways of the poplars. Then they so suddenly cast off their bud scales; develop their downy flowers; and altogether change their appearance as they come into leaf that one is fairly in a whirl with watching them. The pendulous aments of the cottonwood have in fact for some time a good turn in the wind before the leaves begin to show; while these latter as they unfold emit a balsam-like fragrance and are covered with a gummy substance. With its ashy grey stem and bright, fluttering leaves which turn in the autumn to a brilliant yellow, the tree appears among our silva an individual so striking and beautiful that it must call largely upon the admiration of all. It grows in a wild state along the banks of streams where it rapidly attains a free and full development. In cultivation it is also seen having been extensively chosen for planting. As the wood it bears is soft and not suitable for many purposes it is largely made into paper pulp.

DOWNY POPLAR. RIVER OR SWAMP COTTONWOOD.

Pópulus heterophýlla.

FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
<i>Willow.</i>	<i>Crown narrow, round-topped; branches, irregular.</i>	<i>40-80 feet.</i>	<i>Georgia, Louisiana and Mississippi to Connecticut.</i>	<i>April, May.</i>

Bark: reddish brown; rough; and broken into long, narrow plates. *Leaves*: large; with long, round petioles; rounded ovate, with blunt apex and squarely-cordate base, the lobes of the base often overlapping a small portion of the leaf-stem; serrate, with obtuse and incurved teeth. When young the leaves are covered with a white wool which falls as they mature; the veins and petioles, however, always retain traces of this down. *Staminate catkins*: very large; dense; drooping. *Pistillate ones*: raceme-like; loose. *Capsules*: splitting when ripe into two recurved sections and allowing the tufted seeds to escape.

Besides the strong, attractive personality of these trees there is little in nature more beautiful than the aments of the pistillate ones when their capsules are opening that the seeds may escape. With tufts of cream coloured white hairs which are silky and soft these minute seeds are enveloped, and so they are borne on the breezes in much the same way as sails uphold a ship. When ripe the capsules are golden brown while a peep into them shows that they are lined with lemon-yellow. The black poplar as the tree is also popularly called was early known to science, it having been described by Mark Catesby in 1731. One striking characteristic it possesses

quite at variance with those of its relatives. Of the mature trees the bark divides into long, narrow plates, which at their extremities curve away from the tree, but remain attached at the centres as does the bark of the shell bark hickory.

P. glandidentata, large-toothed aspen, as its name would imply, is known by the large, coarse teeth which surround the margins of its broadly ovate and pointed leaves. When young they have on their under surfaces a white tomentum; but it is the baby leaves which are particularly beautiful, they being on both sides soft and silvery and making the tree appear in early spring as though it were arrayed in woolly white. Although reported to occur in a wild state through the Alleghanies we did not meet with it in our travels. Northward, it is to many a familiar individual.

In addition to these native species of poplars there are seen through the south these others which have become naturalized.

P. dlba, silver-leaf poplar, which is one of the best known and most graceful of the genus. Its young foliage is covered with a thick, white tomentum which clings always to the undersides of the leaves, and when by the wind these silvery surfaces are turned upward, the people take it as a sign that rain is near. The tree springs up along roads and is abundantly reproduced by suckers that arise from the bases of the older ones.

P. canadicans, balm of Gilead, a tree quite common through the south, was in the beginning planted by residents and has now escaped from cultivation. Its natural home has been pointed out by Professor Bailey to be in the region of the great lakes and in Michigan he reports a number of individuals.

P. dilatata, Lombardy poplar, appears an unusually strange figure when seen looming tall and straight on some of the high and remote places in the Alleghanies. Originally it was imported to this country from Italy; but now so thoroughly naturalized has it become that its perpendicular, distinctive manner of growth is perhaps better known than the habit of any one of the native species. In many places, however, where once the trees grew singly they now appear to be sending up numerous shoots from their stoloniferous roots.

THE BIRCH FAMILY.

Betulaceæ.

Trees or shrubs, with simple, alternate petioled leaves having straight veins, and monœcious flowers which grow in aments.

AMERICAN HORNBEAM. BLUE OR WATER BEECH.
IRONWOOD.*Carpinus Caroliniana.*

FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
<i>Birch.</i>	<i>Crown open; branches spreading.</i>	<i>30-40 feet, or more.</i>	<i>Texas and Florida to New Brunswick and westward.</i>	<i>April, May Fruit: Aug., Sept.</i>

Trunk and branches: ridged. *Bark:* smooth; greyish black, and irregularly and vertically lined with stripes of dull grey. *Branchlets:* slender; when young, brownish purple, terminating in green-bronze; those that are older, with an ashy hue. *Leaves:* with slender petioles; ovate-lanceolate, or oblong, pointed at the apex and rounded or slightly cordate at the base, slightly one-sided; sharply and unevenly serrate; ribs straight; pubescent; especially so in their axils; above smooth. *Fruit:* growing in a green, elongated, drooping cluster. The small nuts borne singly at the base of two opposite, halberd-shaped, three-lobed bracts.

When along the stream's bank the growth is thick and close and various forms of vegetation jostle with each other in the struggle for existence, we often see standing out clearly among them all, the boughs of this tree hung with its long graceful clusters of fruit. Its preference really is to lean over the stream. In driving from Johnston City to Roan Mountain station, in Tennessee, the tree almost seemed to map out the way and considerably diverted the attention from the perils of the road. The trap we drove in and the horses were very old and altogether out of joint; the charioteer youthful but not without skill; and seventeen times in sixteen miles we crossed and recrossed the Doe river.

HOP-HORNBEAM. LEVER-WOOD. IRON-WOOD.

Ostrya Virginiana.

FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
<i>Birch.</i>	<i>Crown, round; branches drooping at the ends.</i>	<i>20-60 feet.</i>	<i>Florida and Texas northward and westward.</i>	<i>April, May. Fruit: July-Sept.</i>

Bark: brownish, furrowed vertically, and scaly. *Branchlets:* purplish brown, and dotted with grey; lustrous. *Leaves:* with short, pubescent petioles; oblong-lanceolate; taper-pointed at the apex and rounded at the base; often unequal; doubly and sharply serrate; dark yellow-green above; almost smooth; lighter coloured below and tufted in the axils of the straight veins. *Flowers:* growing in catkins; the staminate ones about two inches long, with scales fringed on their margins. *Pistillate catkins:* shorter. *Fruit:* borne in long, drooping, hop-like strobiles, with entire, overlapping scales, or sacs which are bristly at their bases, *Nuts:* flattened,

No less than *Carpinus Caroliniana* is this tree found bathing its roots in many of the southern streams of the upland districts, while in the north and west as well it appears to be equally content and at home. It is most attractive when hung with its yellow tinted clusters of fruit which are as decorative and pretty as those of a hop vine. For its beauty, in fact, it is much planted. When in the open it develops a rounded and graceful crown.

BEAKED HAZEL-NUT.

Corylus rostrata.

FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
<i>Birch.</i>	<i>Bushy.</i>	4-8 feet.	Georgia and Tennessee northward and westward.	April, May. Fruit: Aug., Sept.

Branches : light brown; glabrous or often pubescent; slender. *Twigs* : nearly glabrous. *Leaves* : with slender pubescent petioles; ovate, or ovate-oblong; pointed at the apex and slightly cordate, or blunt at the base; doubly serrate; bright green above; glabrous; paler underneath and nearly glabrous; thin. *Staminate flowers* : growing in catkins; the single flowers in the axils of each bract with four stamens the filaments of which are divided so as to produce eight anther sacs. *Pistillate flowers* : clustered, arising from scaly buds, each in the axil of a bract. *Fruit* : found at the base of an involucre which is prolonged into a curved tube, cut at the summit and covered with bristly yellow hairs. *Nut* : brown; ovoid, or ovate. *Kernel* : edible; sweet.

Of the genus *Corylus* there are but two representatives in our range and they are not only both well known but readily distinguishable the one from the other. At the present time we regard them mostly for their fruit's sake which is gathered and sold at the markets; but in former days almost all their parts were relied on for practical uses. Among a few of these that have been recorded are that the wood was made into farming implements, poles, spars, hoops, sticks and angling rods, while the plant's juices were employed for staining. In brewing, the dried twigs were used as a substitute for yeast when they were soaked in fermenting liquor. Coals for drawing outlines were prepared from the wood which painters and engravers desired above all others as the substance was one that worked freely and could be taken out cleanly with Indian rubber. From the nut's meat, chocolate as well as bread was made and also an oil procured little inferior to that of almonds. Even at the present time the New England Indians make use of the twigs in binding fish-dams.

C. Americana, hazel-nut or filbert, is distinctive from having longer leaves than the preceding species and because its staminate aments are longer. It is also a more pubescent shrub. But the most pronounced point of difference between the two is the dissimilarity in the shape of their involucre, that of *Corylus Americana* being rounded at the base and extending into a somewhat fluted, leafy border which although somewhat hairy is quite with-

out the glass-like bristles of *Corylus rostrata*. This indeed is the shrub known to almost every country urchin and which when its catkins begin to loosen and its golden pollen to fall proclaims loudly the coming of the springtime.

SMOOTH ALDER.

Alnus rugosa.

FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
Birch.	Spreading; rounded.	25-40 feet, or a shrub.	Texas and Florida northward and westward.	March, April.

Bark: smooth; twigs slightly pubescent. *Stipules*: early falling. *Leaves*: with pubescent petioles, oval, or obovate; bluntly pointed or rounded at the apex and wedge shaped, or rounded at the base, irregularly and finely serrate; dark green; glabrous above and covered on the veins underneath with a rusty pubescence. *Flowers*: usually appearing before or with the leaves according to the climate. *Staminate aments*: yellowish brown, long; pistillate ones shorter, thick and ovoid.

Although there are times when the smooth alder flourishes as a tree it is more usual to find that it has not had ambitions beyond that of being a shrub. It is a native species growing in wet, or moist soil and is most abundant in the southeastern states, where, shaking the golden pollen from its catkins often on the young and striving leaves, as well as on the demure pistillate blossoms, it is one of the very charming features of the opening season. In European folk-lore the alder is still regarded as one of the spirit-haunted trees and many that have sufficient hardihood to chop it down declare, that "it bleeds, weeps, and begins to speak."

A. Alnobetula, green or mountain alder, is common among the growth of the high Alleghanies, where in June its bloom unfolds at the same time as its leaves. It is always a shrub, seldom becoming over ten feet high and is distinctively marked by its angled and greyish young branches. Its nut also is bordered all about by a fine membranous wing. The leaves are oval, or ovate, and on their undersides, even at maturity, there is some brownish pubescence.

RIVER BIRCH. RED BIRCH.

Betula nigra.

FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
Birch.	Spreading or drooping.	30-90 feet.	Florida northward.	April, May.

Bark: reddish brown; dotted and peeling, not as the white birches but becoming loose and hanging in thin, light brown sheets. *Twigs*: darkly coloured. *Leaves*: often two together, with slender, pubescent petioles; ovate, usually pointed at both ends or more abruptly narrowed at the base; unequally and often doubly serrate with entire bases; green above, whitish and pubescent underneath, at least when young. *Flowers*: growing in long, narrow catkins. *Nut*: small; pubescent at the apex, the broad wings ciliate on their margins.

This birch is indeed a child of the south for none other of the genus is known to grow in a climate so warm as that of Louisiana, Florida and Texas. In fact through the middle and in particular parts of the southern states it is very common and with its pendulous, graceful branches is always a charming individual. An interesting point in connection with it is the wisdom it displays in the matter of securing a good footing for its young seeds. Growing as it does along river banks it finds it necessary to use some diplomacy and to adapt itself to its surroundings. Therefore in June, or even earlier, it ripens its seeds which as they then fall in the soft, receptive soil have a good opportunity to live and to grow. Before the cold weather comes on its seedlings are often a foot high and have sufficient strength to withstand the swelling and washings of the stream. Should this



tree, however, delay to mature its seeds until the autumn, as is customary with the genus, they would have some difficulty in finding a resting place in the water-washed soil. Through the winter the river birch has an open, feathery look which is very attractive. It grows also in soil that is comparatively dry. Through New England it is known but is there rare and very local.

B. lutea, yellow birch, grey birch, possesses as its peculiar charm a bark different from that of any other tree. Its outermost part is formed of a film-like skin which curls away from the stem in strips. In certain lights it looks a ruddy gold with always, however, a silvery sheen. Through the winter when the earth is bare there is much to attract the eye in this unique characteristic, although often when the tree grows in the open it becomes dull and has a weather-beaten air. In the spring the terminal, staminate aments, usually borne in clusters, and showing their yellow anthers, appear like well-marked caterpillars; the pistillate ones are demure, brown little things and hidden away below the others. On the upper slopes of the Alleghanies the tree occurs in abundance.

B. lenta, sweet black, or cherry birch, has in its youth a smooth bark which, although it becomes quite rough with age, does not peel. The tree in general appearance resembles an old cherry. It seems, however, to be best known by its sweet, aromatic bark which is nibbled by country children and from which is distilled birch oil. This substance, an important article of commerce, is identical with the oil of wintergreen procured from the little plant, *Gaultheria procumbens*. Through the Roan Mountain country the natives formerly made in the season, quite a little money with their birch stills.



THE BEECH FAMILY.

Fagdcæ.

A large group of trees and shrubs with simple, alternate and petioled leaves, their margins being entire or variously cut and lobed; and which bear monœcious flowers, the staminate ones forming aments and the pistillate ones produced solitary, or a few together. Fruit: a nut, or acorn.

AMERICAN BEECH. (Plate XLI.)

Fagus Americana.

FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
Beech.	Round-topped; branches, horizontal.	50-70-120 feet.	Texas, Florida to Nova Scotia and westward.	April, May, September, October.

Bark: light bluish grey; smooth. *Leaves*: with short petioles; ovate; with pointed apex and rounded or narrowed base. *Ribs*: straight, unbranched and terminating in the remote teeth; fringed on the margins with soft, white hairs which soon fall; glabrous. *Flowers*: appearing with the leaves. *Staminate ones*: borne in globose heads clustered on drooping peduncles and subtended by linear, thin bracts. *Pistillate ones*: usually in pairs and terminating a scaly-bracted peduncle. *Fruit*: a pair of three-sided nuts, with a sweet and edible kernel, growing within a prickly bur which splits when ripe midway to the base.

This great, solemn-looking tree is the only native species of the genus in this country and from its earliest youth until old age is one of the most beautiful. The peculiarity of its mottled bark and the clean-cut of its limbs make it as noticeable in winter time as it is in summer when covered by its crown of lustrous, deep green leaves. The seedlings show it in one of its most interesting stages. Their small leaves, as is true of all the young ones, are covered on their veins and under sides with a soft, silky white fuzz which extends as a delicate fringe about their edges. Only as they reach maturity



PLATE XLI. AMERICAN BEECH. *Fagus Americana*.
(120)

does this disappear and the ribs become confirmed in their straight, unflinching outline. In early spring the buds are exquisite. There are then also, long, gaily-coloured bracts to be seen hanging about the flower. And quite worthy of attention are the stipules which on some of the trees are a rosy crimson while on others they are simply a sombre brown. From the quaintly shaped nuts of the beech can be distilled a fine oil.

CHINQUAPIN.

Castanea pumila.

FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
Beech.	Crown, rounded.	10-45 feet.	Florida and Texas northward to New Jersey and westward.	Fruit: September.

Bark : light brown, furrowed. *Leaves* : with pubescent petioles ; oblong ; acute at the apex and rounded or tapering at the base, often slightly one-sided ; feather-veined, the ribs terminating the teeth with a bristle-like tip ; dark green and glabrous above, pale below by reason of the dense covering of white tomentum. *Staminate aments* : maize coloured ; slender ; axillary. *Pistillate flowers* : a few in each involucre. *Fruit* : growing as a green prickly bur which contains but one or rarely two, top-shaped, small nuts. *Kernel* : very sweet, edible.

It is not difficult to know when chinquapins are ripe for almost every country child has either a long string of them about his neck or a small bag of them in his hand which, for a nickel, he wishes to sell. They are not flattened on their sides and their meat is very sweet,—truly, as the old writers have said, “a great daintie.” But so small are these nuts that even the natives exclaim when eating them “powerful tejus.” They are very eager to germinate and have been observed to send out their hypocotyl even before they have touched the ground. Although usually a shrub, *Castanea pumila* attains to the size and habit of a tree in such situations of soil and climate as suit it best.

C. nana is always a low shrub. Its bright green leaves average about four inches long and on their upper surfaces are extremely glossy. Underneath they are paler and slightly pubescent. The nuts are very small.

C. dentata, American chestnut, is thoroughly well known and in nobility of outline stands almost as a rival of the white oak ; its dome-like, rounded crown, and branches spreading at a wide angle make it indeed one of the most majestic figures of the woodlands. And when, in maize coloured tassels, the flowers hang through the tree it is a splendid sight, while also in its large prickly burrs there is much attraction. Not until it has reached a hundred years old is the tree thought to have attained its best proportions, but long before that time it is of sufficient beauty to kindle admiration. For making into charcoal its wood is well adapted. As fuel it snaps too strongly to be desirable.

THE BEECH FAMILY.

KEY TO THE OAKS.

- A. Leaves bristle-tipped, divided :*
 - a. Green on both sides.*
 - b. Covered with tomentum on the lower surface.*
- AA. Leaves bristle-tipped, mostly entire.*
- AAA. Leaves not bristle-tipped.*
 - a. Crenate and dentate.*
 - b. Pinnately lobed.*
 - c. Entire (sometimes toothed, or rarely bristle-tipped).*



- A. Leaves bristle-tipped, divided.*
 - a. Green on both sides.*

TEXAN RED OAK. (Plate XLII.)

Quercus Texana.

FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
<i>Beech.</i>	<i>Tall, narrow.</i>	<i>75-200 feet.</i>	<i>Florida and Texas to Missouri and Indiana.</i>	<i>March-May. Fruit; Sept.-Oct.</i>

Bark: reddish brown; ridged and broken into plates. *Leaves:* large, with slender, light coloured petioles; obovate or oblong, squared or wedge-shaped at the base and pinnately divided into five to nine oblong lobes, which have a few coarse teeth with bristle tips. *Sinuses:* broadly rounded, the deepest of which extends to within a quarter of an inch of the midrib. Bright green; lustrous above; lighter below and tufted conspicuously in the axils of the veins. *Flowers:* monœcious. *Acorns:* sessile, or growing on short thick peduncles and maturing the second season. *Cup:* saucer-shaped, with closely appressed scales. *Nut:* ovoid, or ovate and three times or more longer than the cup.

This great oak, which, in the Mississippi basin where it attains its best development, becomes taller than any other of America, may well be chosen for description as being one of the most interesting if not the least known of the group to which it belongs. It is Buckley's oak of the south, having been recognised by him as different from other species and described as *Quercus Texana* in 1860. It had been confused with the eastern red oak, *Quercus rubra*, while in other places, it has appeared to botanical investigators as being almost identical with the pin oak, *Quercus palustris*. From the former of these two, however, it can be known by its winter buds, which are considerably shorter and broader than those of the red oak; by its rather small and highly lustrous leaves; by its timber, which lumbermen have now recognised to be of more value: and from the pin oak by its fruit; and also by its enlarged and buttressed base which alone is a feature distinctive enough to mark it from all other trees. When its vividly green leaves are lit by the sunlight and its dusky, unbranched stem towers high above other growth it is indeed a notable object. In the autumn its leaves



PLATE XLII. TEXAN RED OAK. *Quercus Texana*.
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do not turn to those colours which are associated with either the red or the pin oaks. As is true of nearly all oaks, with the exception of those belonging to the group of so-called white oaks, this tree takes two years in which to mature its acorns. After the little flower in the axils of the leaves has received in early spring the pollen from the long swaying catkins, it rests, or remains inactive over the winter, or until the next spring when other little blossoms are beginning their work just where it left off. Then it suddenly awakes to activity, grows steadily and by the autumn of the second year, presents the ripened fruit.

“The pulpy acorn, ere it swells, contains
The oak's vast branches in its milky veins;
Each ravel'd bud, fine film and fibre-line
Traced with nice pencil on the small design.”

Q. palustris, pin oak, water oak, or swamp Spanish oak thrives best in soil that is subject to moisture and is distinctive from the ever pendulous droop of its lower branches. Its rather small broadly ovate, or obovate leaves are deeply pinnatifid into five to nine divergent lobes which at their extremities are toothed and bristle-tipped. On their upper surfaces they are lustrous. In the autumn of the second season the rather small acorns mature. They grow in either a sessile way or on very short peduncles and often their light brown nut with its thin shell is conspicuously striped. When hung early in the spring with its long maize coloured catkins, and the tender young leaves are unfolding the tree presents a stirring and attractive sight.

Q. coccinea, scarlet oak, is the one of the great order which turns in the autumn to so glorious a tint of scarlet; touches of it appearing first here, then there as balls of fire on the landscape, until finally it spreads acres of flame colour through the forests. Again in the spring when the young leaves are unfolding it is a lively figure, for they too are highly coloured. The lobes of these leaves are lanceolate, toothed and tipped with bristles. On both sides in age they are smooth and lustrous. The rather large acorns are partly covered by the scaly, top-shaped cup while the kernel is light coloured and has a bitter flavour. Another means of distinguishing this oak is that its inner bark is reddish.

Q. rubra, red oak, has its crown clothed with large obovate and dull green leaves which are pinnatifid, but have not their lobes so deeply cut as those of the scarlet oak, and which near the base greatly decrease in size. They are, however, very variable. But always by the acorns the tree can be known. When mature, which they do not become until the second season, they are about an inch and a quarter high with a very flat, saucer-

shaped cup above which the ovate, smooth nut arises four or five times, or more high. In early spring the look of the stalwart tree is greatly enlivened by its slender staminate aments as they dangle among the young leaves.

Q. Georgiana (Plate XLIII.) is mostly a shrubby species of oak from six to eight feet high, but sometimes attains the proportions of a tree thirty feet tall. It is found on Stone Mountain in Georgia and along the rocky banks of the Yellow river. It is, in fact, very local in its habitat. Its small, obovate leaves have a wedge-shaped base and from three to five variously formed lobes with persistent, bristle tips. The acorns with saucer-shaped cups also are small, two usually growing together on short peduncles. As the tree grows in thick clumps it is more of a botanical curiosity than worthy of admiration. Economically it is regarded as being of no use whatever.

Q. velutina, black oak or quercitron, is, in the outline of its foliage, one of the most variable of the genus. Sometimes its leaves occur in a narrow form when they are nearly identical with those of the scarlet oak. Again they become very broad with ruggedly-formed, rounded and dissimilar lobes which have lost nearly all trace of their bristle tips. On the upper surfaces of these leaves small glands are perceptible in the spring and early summer, while underneath they show a rusty tomentum. The buds are long, pointed and scaly and the acorns have a top-shaped, scaly cup which extends into a short, thick peduncle. The kernel of the nut is bright yellow. The black oak is so called from the very dark colouring of its outer bark, the inner one being a vivid orange. It is a large tree attaining a height usually of from seventy to ninety feet and very conspicuous in the autumn from the rich, russet and red shades of its foliage.

Q. nigra, water oak, a large forest tree which is found growing in swamps and along the banks of streams, is not known to extend farther northward than Delaware. In outline its leaves are somewhat obovate with from one to three blunt and not always bristle-tipped lobes near their apices. On both sides they are green and lustrous with the exception of a few tufted bits in the axils of the veins underneath. The acorns are small with saucer-shaped cups.



A. Leaves bristle-tipped, divided.

b. Covered with tomentum on the lower surface.

SPANISH OAK. TURKEY OAK.

Quercus digitata.

FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
Beech.	Round-topped; branches, spreading.	20-30 or 80 feet.	Florida and Texas to New Jersey and westward.	April, May. Fruit: October.

Bark: brownish red or almost black; rough and broadly-furrowed. *Leaves:*

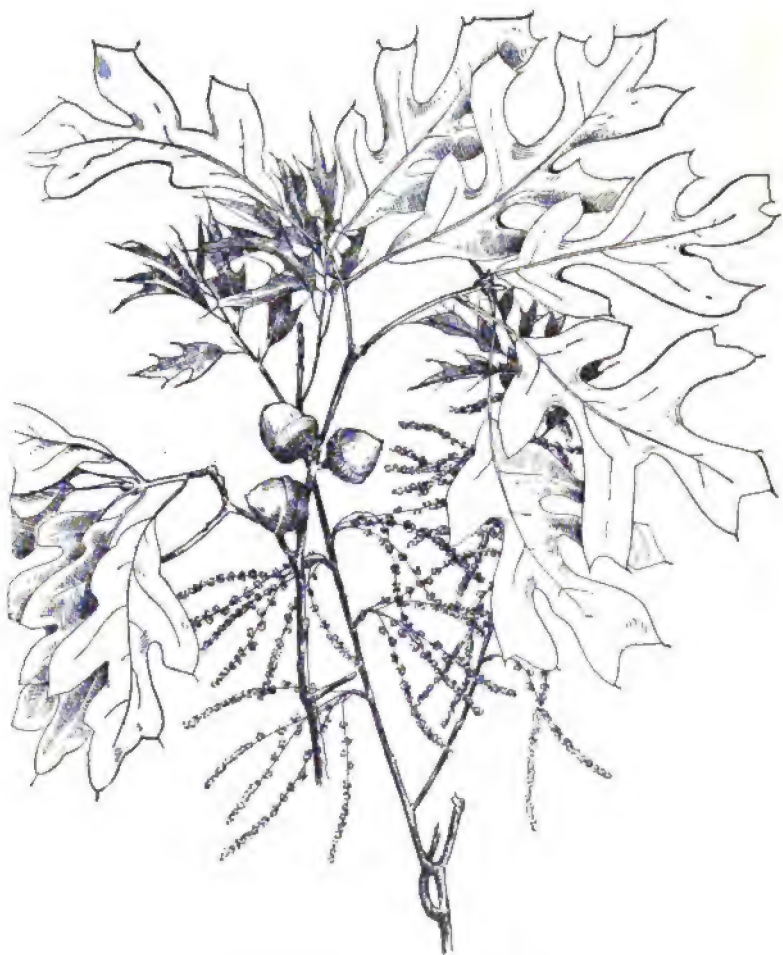


PLATE XLIII. *Quercus Georgiana*.
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obovate, or oblong, pinnatifid, widening towards the middle and forming from three to seven long, slender lobes; the terminal one often somewhat scythe-shaped; entire or sparingly toothed and bristle tipped; the base wedge-shaped or rounded, frequently one-sided. Eventually dark green and glabrous above, rusty grey and pubescent underneath. *Acorns*: small; almost sessile. *Cup*: shallow with close scales. *Nut*: rounded and very slightly hollowed at the apex. *Kernel*: bitter, orange-yellow.

By their angular, crisp cut the leaves of the Spanish oak present in the forest an outline distinctive enough to mark the species even amid an abundant growth of other things. They also hang downward from the ends of the branches and so produce a plume-like effect. The young shoots, as well as the under side of the leaves, are moreover noticeably covered with a greyish down. In North Carolina where this oak grows freely it is often and quite inappropriately called red oak, while by the mountaineers it is again one of the genus known as the turkey oak, a name suggested by the fancied resemblance of the leaf's outline to that of the bird's footprint. In tannin the bark of the tree is unusually rich.

Sometimes on the side of an oak branch, a tiny exuberance will excite the curiosity. Probably it is the acorn just starting on its young life, for the Spanish oak and the group to which it belongs, do not mature their fruit until the autumn of their second year.

Q. pagodaefolia, an inhabitant mostly of swamps, is peculiar to the southern states and the Mississippi Valley. In April its very slender, staminate aments cling to the trees with the young and then purple tinted leaves. These latter are pinnately seven to eleven lobed, the segments being broadly lanceolate and entire, or having one or two coarse teeth with bristle tipped apices. A close grey tomentum covers their under surfaces and slight traces of it as well appear on their lustrous upper sides. The rather small acorns are sessile or grow on short peduncles while their cup which is broad and saucer-shaped covers to nearly its middle the dull brown and striped nut. It differs chiefly from the Spanish oak by its greater size and smoother bark.

Q. Catesbæi, turkey oak, or scrub oak, is noticeable through the very highly polished upper sides of its leaves and the yellowish tomentum which clings to their under surfaces. In outline they are obovate with a wedge shaped base. The sinuses of the falcate and bristle-tipped lobes are broadly rounded and deep. In the large top-shaped cups the acorns are imbedded to above their middle and show at their apices a slight depression. They grow on thick peduncles. Although known to occur at various heights from twenty to sixty feet, *Quercus Catesbæi* is also shrubby in habit. In dry, sandy barrens it grows rapidly and while not at all handsome produces a good stretch of foliage.

Q. Marylandica, black Jack or barren oak which is quite as often shrubby

in habit as it is a small tree, bears a leaf perhaps more peculiar in outline than that of any other of the great genus. It is obovate, and spreads broadly above the middle into from three to five short, rounded lobes which are occasionally toothed and bristle-tipped. At maturity these leaves are dark green above, lustrous and smooth, while their undersides have then lost nearly all traces of the rusty pubescence which coated them in younger days. The bark of black Jack is very dark, rough and separates into plates.

Q. nana, bear or scrub oak, rarely becomes a small tree, but as a shrub it grows closely together and thus forms often an interwoven and extensive growth. Although mostly a northern species it was found by Dr. Small in North Carolina and is known also in Virginia. Its obovate leaves have short petioles and are pinnately three to seven lobed, their apices being toothed and bristle-tipped. While smooth on their upper surfaces they are a dull dark green, and have underneath a thick grey tomentum. The acorns are not very large.



A.A. Leaves bristle-tipped, mostly entire.

SHINGLE OAK. (Plate XLIV.)

Quercus imbricaria.

FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
Beech.	Pyramidal or oval.	50-100 feet.	Tennessee and Georgia to Pennsylvania and westward.	April, May. Fruit: October.

Bark: dark grey or reddish; smooth on the young stems and branches, fissured and covered with thick appressed scales. *Leaves*: oblong or lanceolate-oblong, pointed at the apex and projecting when young the midrib; rounded at the base or tapering into the petiole; often one-sided; mostly entire; bright green and lustrous above; paler below and covered with a brownish grey tomentum; deciduous. *Flowers*: yellowish green and appearing with the leaves. *Staminate aments*: long and drooping; pistillate flowers, solitary or a few borne on pubescent peduncles. *Acorns*: small, maturing the second season. *Cup*: flat; saucer-shaped with closely appressed scales. *Nut*: one quarter to one half an inch long; rounded, yellowish brown; shiny.

This very beautiful and symmetrical-growing tree was first described by André Michaux who saw it in the high mountains of the Alleghanies. It belongs to the group of entire leaved oaks although frequently on shoots the leaves are lobed and resemble in general appearance the willow oak. In alluvial soil and where the climate suits it well it becomes very handsome, well deserving a place in ornamental planting and especially as it is hardy as far northward as Massachusetts. Through its western range it is called Jack oak or black Jack although mostly we associate these names with *Quercus Marylandica*. In North Carolina it is also known as the water oak. As, however, its coarsely-grained wood is principally used for the making of shingles, the very practical name of shingle oak seems to be the one which will eventually best designate it to the people.

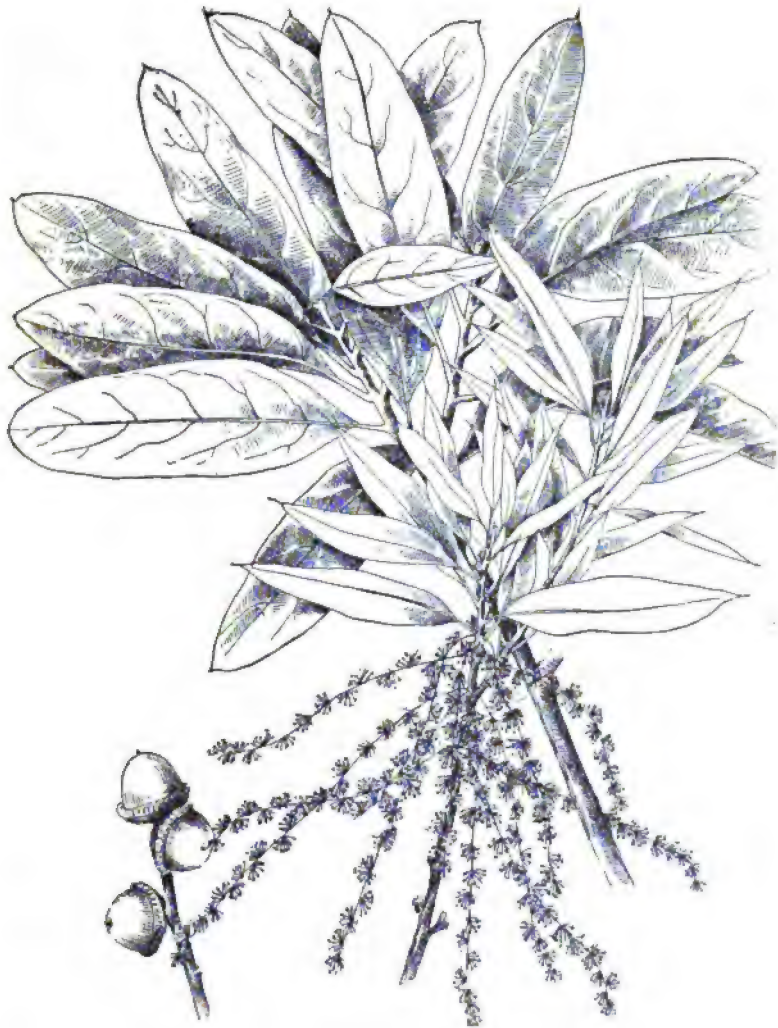


PLATE XLIV. SHINGLE OAK. *Quercus imbricaria*.
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Q. laurifolia, laurel oak or water oak, (Plate XLV.) grows with a stately trunk and dense round-topped crown to sometimes the height of eighty or one hundred feet. With its very lustrous green leaves and the nearly black bark of its tall stem, it forms one of the most pleasing individuals of the family, at times appearing almost as impressive as the live oak. Along the coast from Wilmington, N. C., to Louisiana it is frequent and attains its best development in eastern Florida. Through the cities it is much planted. Its oblong-oval leaves with their grooved, yellow petioles and bristle tipped apices are in general entire, although those of the young shoots are sometimes undulately-lobed.

Q. Phellos, willow, or peach-leaved oak, was before it became well known regarded by botanists as being quite a remarkable individual. It is tall and attractive with narrowly oblong or linear, entire leaves from one and a half to two and a half inches long. At both ends they are pointed, the apex showing a bristle tip. When they are mature they become smooth and lustrous on both sides. In texture they are thick, something like leather. The very small and pretty acorns have a flat saucer-shaped cup which hardly covers more than a quarter of the nut. About Florida the tree blooms as early as March through moist woods and in swamps.

Q. brevifolia, blue Jack, is a small and shapely species of oak which thrives in sandy places from North Carolina to Florida and westward. Its oblong-lanceolate, entire leaves are wedge shaped, or rounded at their bases and have thick, undulating margins. Some of them, however, show lobes of various shapes near the apices, or along the sides. The acorns which sit closely on the twigs are borne very profusely. In the field of usefulness the wood is only valuable for fuel.

Q. pumila, running oak, is a shrub which spreads itself by stolons and covers acres and acres of sandy, barren soil along the coast region. Its small elliptical, or oblanceolate and entire leaves have very short petioles and are pointed at both ends, the apices being bristle-tipped. In texture they are stiff and leather-like with a pale, greyish down underneath. The nuts which are well sunken in a rounded, saucer-shaped cup ripen at the end of the first season. It seems that every year this oak is more or less demolished by forest fires and it has therefore but the season's growth to make its very fine showing.

Q. myrtifolia, scrub oak, another shrub, forms by means of its rigid stems an interwoven growth and covers as low thickets acres along the sea shore's sandy ridges, and borders various islands from South Carolina to Florida and Louisiana. It may be distinguished by its obovate or oblong-lanceolate leaves with their entire and revolute margins and which are bristle-tipped at their apices. On their upper sides they are intensely



PLATE XLV. LAUREL OAK. *Quercus laurifolia*.
(131)

glossy while underneath they are brownish. The very small acorns are rather light coloured, and mature the second year.



A.A.A. Leaves not bristle-tipped.

a. Crenate and dentate.

COW OAK. BASKET OAK.

Quercus Michauxii.

FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
<i>Beech.</i>	<i>Rounded.</i>	50-100 feet.	Texas and Florida to Delaware,	April, May. Fruit: Sept., Oct.

Bark: ashy grey, breaking off in thin flakes. *Branchlets*: marked with pale lenticels. *Leaves*: obovate, or oblong with slender petioles, pointed at the apex and wedge-shaped or rounded at the base, the margin marked with small pointed or rounded lobes. Bright green and lustrous above, covered underneath with a silvery grey tomentum. *Acorns*: sessile, or with short peduncles. *Cup*: rounded. *Nut*: ovoid, considerably higher than the cup, and ripening during the first season. *Kernel*: edible; sweet.

Of this group of southern white oaks there is hardly one more handsome than *Quercus Michauxii* with its tall, column-like trunk covered as it is with an attractive light grey bark. It grows in bottom lands and low swamps which often during the greater part of the year are covered with water. By Mark Catesby it was first described and he thought it probably the equivalent of *Quercus Prinus*, the rock chestnut oak, which it somewhat resembles; and for some time it passed either for, or as a variety of the last mentioned tree, until in fact its characters were well set forth by Mr. Nuttall and other notable writers. As a timber tree it is very important, being useful in constructions of various sorts, for agricultural implements, fences, cabinet work and many other things. To the nut's meat there is an unusually sweet taste, a fact which small domestic animals appreciate and for which the negroes have an especial fondness.

Q. acuminata, chestnut oak, or yellow oak, is one of our well known trees, and is renowned for its majestic and forcible beauty. At most, it grows as tall as 160 feet, sending up a straight shaft covered with a silvery white bark which is broken into thin scales. Its crown is rather narrow although finely shaped. The leaves hug the branches closely. They are obovate, or lanceolate, from five to seven inches long and in general appearance much resemble those of the true chestnut tree. Above they are green and shiny, pale or silvery white underneath and covered with a fine, grey tomentum. Through the mountains of North Carolina and Tennessee these leaves hold to their best known outline. When they assume, however, broader forms they resemble the foliage of *Quercus Prinus*, but can even then be dis-

tinguished by the glandular tips of their teeth. In May when the tree blooms and the leaves are young and tender its slender maize coloured aments add much to its beauty. The acorns, which are edible, mature in the autumn of their first season.

Q. Prinus, rock chestnut oak, or chestnut oak, bears the distinction of having been one of the first American oaks to be known in Europe. It is tall, usually from sixty to seventy feet high, or occasionally one hundred feet, very vigorous and of majestic appearance. Along the rocky banks of streams, or on dry hillsides through the Carolinas and in Tennessee it is very abundant. The tree is, in fact, an Appalachian one, although it occurs as well northward. The distinguishable points of the leaves are their oblong or broadly obovate outline; their rounded or tapering bases and the many coarse and crenate lobes of their margins. Above they are dark green, glabrous and slightly lustrous while below they are pale and covered with an ashy down. The acorns of this species have gracefully shaped cups and nuts, rich in colour which arise three times as high as they. In the tree's bark tannin is plentiful and as its wood shreds easily, the negroes make it into baskets, or even brooms.

Q. platanoides, swamp white oak, belongs also to the group of chestnut oaks and grows along borders of streams and in swamps. It is widely distributed, but does not form forests, growing mostly in groups among other trees. From thirty to seventy feet or even higher it occurs and has a light grey bark resembling, as is implied by the tree's specific name, *platanus* in its manner of breaking into thin flakes. Another point of distinction is the way the little branches droop from the limbs or even appear on the trunk. The obovate and bluntly pointed leaves have wedge-shaped and entire bases while along their margins they are coarsely toothed, the waves becoming near the middle so large as to resemble small lobes. On their upper surfaces these leaves are dark green and smooth while below they are pale and covered with a dense, silvery white pubescence. Commercially the wood of this tree is not distinguished from that of *Quercus alba* and *Quercus macrocarpa*.

Q. prinoides, scrub chestnut or chinquapin oak, is a shrubby species which usually grows from two to four feet high, or rarely reaches fifteen feet. By stolons it spreads itself and thus forms thick clumps of growth, occurring in sandy soil from Texas and Alabama as far northward as Maine. Its leaves are obovate, coarsely toothed along the margins, and have on their undersides a close grey tomentum. During the first season, the acorns mature.

b. Leaves pinnately lobed.

OVERCUP OAK. SWAMP OAK. (Plate XLVI.)

Quercus lyrata.

FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
Beech.	Rounded; branches pendulous.	50-100 feet.	Texas, Florida and Missouri, northward.	March-May.

Bark: reddish or grey. *Leaves*: broadly-obovate; petioled; wedge-shaped or narrowed at the base and lyrate-pinnatifid into from five to nine broadly lanceolate lobes which are entire or toothed, the upper pair widely divergent. *Sinuses*: rounded, deep. Dark green and glabrous above, covered underneath with a silvery white tomentum, or being nearly smooth. *Acorns*: solitary; sessile, or growing on slender peduncles. *Cup*: rounded; thin, with ovate, pointed scales and almost covering the nut.

Along streams or often in ground that is wet throughout the year this oak seems to grow frequently with such companions as the sweet gum, the elm and the cow or basket oak. Sometimes its graceful branches droop so low as to touch the ground. When in the autumn its foliage has turned to scarlet and orange, and it is lit by a ruddy gleam of sunlight it looks very gay, but not more so, however, than the sweet gum.

Q. alba, the white oak, stands often a solitary, towering form, a grey and stately sentinel for many years; or again numbers of the species are seen together forming vast and valuable forests. The tree's pale grey bark, considerably less rough than that of most other oaks, is one of its distinctive features. Its leaves are obovate, and pinnately divided into from three to nine ascending lobes which extend well into the midrib and are entire, or toothed. Above they are bright green, but paler underneath and somewhat glaucous. On the same tree often different forms of leaves will be seen, they being very variable. Early in the spring, they are as they unfold, a bright red, though paler below and covered with a soft pubescence. Soon, however, this bright colour fades and they turn to conventional green. It is then not until very late in the autumn that they again become a deep red and cling, as the half-persistent foliage of some entire-leaved oaks, to the trees long after those of most other deciduous ones have fallen. As a timber tree the white oak is of considerable renown, being used for ship building, in various constructions, interior finish and innumerable other ways.

Q. minor, post oak or iron oak, bears a darkly coloured leaf of such brusque, decided outline that it can readily be identified among a bundle of leaves of the various species. Its largest lobes frequently spread out at almost right angles from the midrib and are again lobed or hollowed at their apices. Underneath they are covered with a greyish down while above they are either smooth in age or roughened by fine hairs. Through the south this tree is well known, and its timber, which is similar to that of the white oak,



PLATE XLVI. OVERCUP OAK. *Quercus lyrata*.
(135)

has a large field of usefulness. In Texas and the Indian territory it forms with *Quercus Marylandica*, the "cross timbers." Along the lower slopes of the Alleghanies the country people call it by the same name as they do *Quercus digitata*, the turkey oak, one which in this case has arisen because wild turkeys feed on its acorns which have a sweet meat.

Q. macrocarpa, mossy-cup oak, or bur oak, was discovered in 1795 near Nashville by the elder Michaux. It is undoubtedly one of the most beautiful as well as the largest and most valuable trees of this remarkable genus. Its distribution also is perhaps wider than that of any other oak, as it has strongly the power to adapt itself to various climatic conditions. By the broad corky wings on its young branches it can be distinguished. Its great leaves from six to fifteen inches long are much lobed, especially near the middle of the blades. In outline they are obovate, and irregularly lobed or pinnatifid into five to seven oblong lobes which are again lobed and toothed. So deeply cleft is the leaf below the larger lobes that the sinus sometimes extends to within an eighth of an inch of the midrib. A soft, pale or occasionally rusty down covers them on their under sides. But the very large acorns are to many, the tree's most attractive feature. Often they are two and a half inches broad with a cup so deeply and finely fringed about its summit as to apparently imbed the nut in a small bird's nest. As the tree occurs northward these acorns become much smaller and as the fringe therefore is proportionately reduced in length this bit of beauty is lessened. While the timber of the bur oak is similar to that of *Quercus alba* it is superiour to it in strength.



C. Leaves, entire, sometimes toothed, or rarely bristle-tipped.

LIVE OAK. (Plate XLVII.)

Quercus Virginidna.

FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
Beech.	Crown, spreading, broad.	40-60 feet.	Mexico to Florida and Virginia.	March, April. Fruit: Sept., Oct.

Bark: dark brown; deeply furrowed. *Branches*: greyish brown and covered with pale lenticels. *Leaves*: with petioles about a quarter of an inch long; ovate-lanceolate; with rounded or pointed apex and rounded or pointed base; entire, the edges inclined to curve inward. Occurring also in a spatulate form with minute side teeth towards the apex. Dark green and glossy above, lighter and pubescent underneath; thick; firm; evergreen. *Flowers*: appearing with the young leaves; the staminate ones growing in long axillary catkins. *Acorns*: borne on long stems. *Cup*: grey, or light brown; deep; pointed at the base and covered with closely compressed, fine and downy scales; slightly fringed about the top. *Nut*: dark brown; oval; lustrous, smooth.

Few trees have been more lauded or written about than the live oaks, and almost inseparably with the mention of them come thoughts of the tilland-

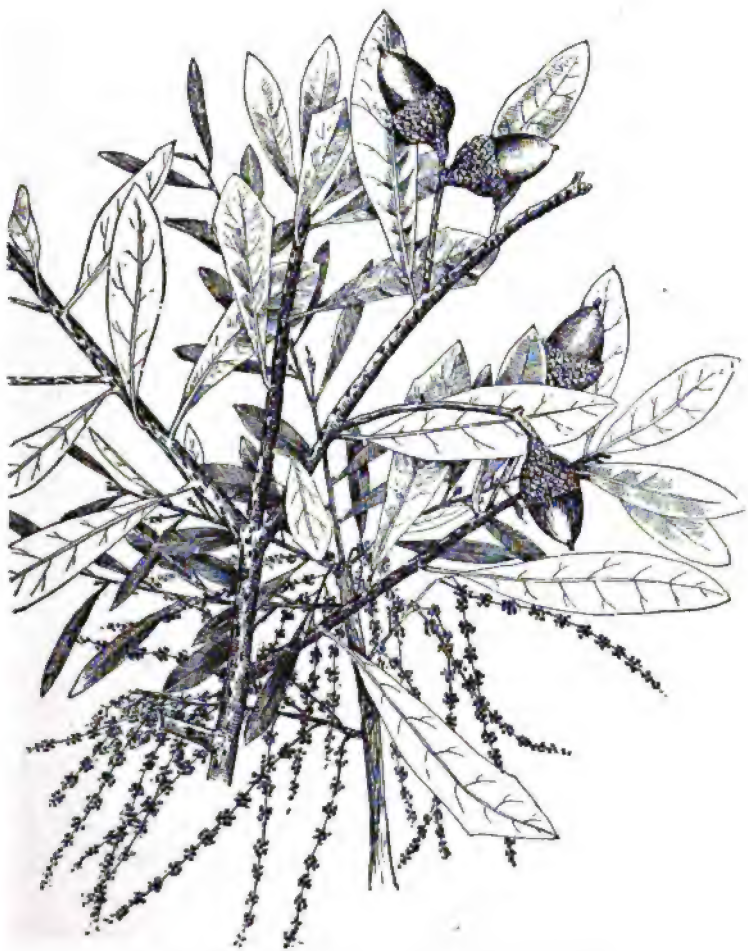


PLATE XLVII. LIVE OAK. *Quercus Virginiana*.
(137)

sia, swaying from their great boughs and impressions of their grave and faithful aspect. Strangers travelling through the gulf and southern Atlantic states are usually keenly alive to the beauty of this tree while to those who have grown up near its shade it is a familiar friend. Once I saw a child's playhouse built in a live oak, a number of steps making it accessible, and here a tea party was held nearly every afternoon. In former days the tree's timber was largely used in ship building, but now, fortunately, iron is substituted. It is much too hard and difficult to work to be available for many purposes, although it is very handsome. The acorns have a sweeter meat than those of any other oak and from them a pleasing oil, similar to that of almonds, is made. The Indians are known to have utilised them to flavour their venison soup and they also laid them by for food during the winter.

Q. Chapmânii caught first the attention of Dr. Chapman as it grew in front of his own dooryard. He thought it, however, to be a form of the post oak, *Quercus minor*. But later it was raised to specific rank by Professor Sargent who then named it in honour of its discoverer. It is usually a stiff shrub, growing through sandy barrens and in pine lands from Florida to South Carolina, although in the streets of Appalachicola, it attains arborescent proportions and grows as high as thirty feet. The leaves it bears are from one and a half to three and a half inches long, oblong-obovate in outline, rounded and notched at the apices and taper to form squared bases. Although entire their margins are uneven and show a strong inclination to be lobed, or to even project those that are blunt. They are leather-like and grow very closely to the branches. The greyish brown cup covers about half of the nut and is at its summit minutely fringed.

Quercus mikima seems to have touched, when in comparison with such great oaks as *Quercus alba* and *macrocarpa*, the other extreme of the family. It is a strange little plant with oblong, or oblanceolate leaves from an inch to one and a half inches long. On their margins they are revolute and entire, or very irregularly toothed. In early days they are a pale apple-green, although showing on their under sides a much darker colour. The greyish cups are top-shaped and finely fringed at their summits while the oblong nuts, projecting the base of the style, arise considerably above them.

THE ELM FAMILY.

Ulmaceæ.

A group of trees or shrubs with simple, alternate and petioled leaves having stipules at their bases; and which are pinnately-veined, entire or in various ways serrate. Flowers: very small, perfect, monœcious or dioecious. Petals: none. Fruit: a samara, or a small, sweet drupe.

(Plate XLVIII.)

Ulmus serotina.

FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
Elm.	Spreading, branches pendulous.	40-50 feet or more.	Georgia, Tennessee, Alabama.	Early autumn. Fruit: November.

Bark: light grey; close. *Branchlets*: reddish brown and marked with pale, cell-like dots; becoming corky-winged with age. *Leaves*: one and a half to three inches long, with glabrous or glabrate petioles about one quarter of an inch in length; oblong to oblong-obovate, taper-pointed at the apex and narrowed or rounded at the base; mostly one-sided; pinnately-veined; doubly and coarsely serrate; yellowish green and lustrous above; slightly pubescent underneath along the ribs. *Flower buds*: axillary; smooth; shiny and being noticeable on the tree when in full leaf. *Flowers*: minute, growing on jointed pedicels in drooping racemes. *Calyx*: with obovate lobes, divided to below the middle. *Samaras*: bright green, oval, or ovate and surrounded with a white silky fringe.

This remarkable elm seems not to be very generally known even to the world of science. In its way of blooming late in the autumn it is unusual, for then its delicate sprays of flowers mingle with leaves which have lost even their autumn orange colouring and have turned to the dull tobacco tints of the later season. In fact, before the pale, apple-green samaras fairly gleam through the tree, its leaves have nearly all fallen. In Dr. Chapman's southern flora and by Professor Sargent, in his *silva*, the tree has been confused with *Ulmus racemosa*, although under that name specimens of its leaves only have been distributed. It is, no doubt, the *Ulmus racemosa* of the south and it was not until 1898, that the tree was found blooming in October by Mr. John Muir, Mr. Canby and Professor Sargent, the latter afterwards naming it *Ulmus serotina*. Mr. Boynton of the Biltmore Herbarium also saw its flowers at Rome, Georgia; where in the streets it is much planted as a shade tree, growing well and displaying a large, handsome crown. Other places where it grows are along the river banks of the French Broad near Dandridge; the Cumberland near Nashville, Tennessee, and also near Huntsville, Alabama.

U. alata, winged elm or wahoo, designates a small tree which is mostly



PLATE XLVIII. *Ulmus serotina*.
(140)

confined to the south between Virginia and Florida. Its crown is open and either oval or rounded while the branches are marked by wide, corky ridges, wing-like in appearance. For an elm, the tree's foliage is small, the leaves averaging about one and a half inches long. About their margins they are doubly serrate and somewhat rough on their upper surfaces. The samaras which are pubescent are surrounded with a close, silky fringe.

U. fulva, the slippery, or red elm which as well occurs through our range, has greyish, rough branches quite without corky wings. A well marked feature of the leaves also is the extreme roughness on their upper sides and their comparatively soft pubescence underneath. The semi-orbicular samaras have a winged and unciliate margin which is considerably wider than the small seed. But by its slippery and fragrant inner bark the tree is best known; it being found good to chew on by country folk and also greedily sought by herbalists. The name red elm has been associated with the tree on account of the reddish colour of its wood. It is also known as the moose elm.

U. Americana, American, or white elm although occurring through our range as far southward as Florida, has hardly so recognised a place, nor is it loved with so deep an affection as it is in its true home, New England. Much too well known is it, however, to need a close description. Through its gracefully arched branches it stands always a distinctive feature on the landscape, spreading its spray-like crown like that of a great fountain. Further it may be known because its branches are without corky wings; its foliage almost smooth above and showing at maturity small traces underneath of its early pubescence. In drooping clusters the very small flowers grow and appear early in the season, some time, in fact, before the leaves.

To this beautiful tree there has been attached since the early days of America strong feelings of sentiment. In New England are still a number of historical individuals as well as those famous for their size and venerable age, while in the early days of Massachusetts the Indians carried them to the white man's door to plant as a tribute of friendship.

In parts of the old country the native elm is held to be symbolical of St. Zenobias, as one that was supposed to be dead budded and burst into life when the coffin of that saint was carried by.

SOUTHERN HACKBERRY.

Celtis Mississippiensis.

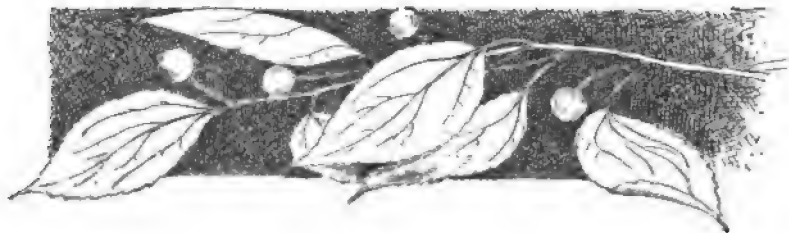
FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
Elm.	Broad; branches drooping.	60-80 feet.	Texas, Florida and Missouri to North Carolina.	April. Fruit: July, August.
Bark: light grey, rough, with wart-like excrescences. Leaves: ovate or				

lanceolate, taper-pointed at the apex and rounded or slightly cordate at the base, somewhat one-sided; entire, occasionally showing a few, sharp teeth; pinnately veined, bright green and glabrous on both sides; thin. *Flowers*: axillary; the staminate ones in clusters; the fertile ones growing solitary and drooping from the end of a slender pedicel. *Fruit*: a small, globular drupe; reddish, sweet.

Almost until the approach of winter the lively-looking foliage of this tree remains on its boughs and so constitutes its chief charm, as in the late season it is seen growing through rich bottom lands, or less often dry soil where gaunt and bare branches predominate. To the hackberry it is a very similar tree although much less known and with a more restricted range. In commerce its timber is confused with that of its relative.

C. occidentalis, hackberry, sugar berry, or false elm, is so appropriately called, as often it is strongly suggestive of an old elm. Commonly it attains to fine proportions, a number of individuals having been reported which measure quite one hundred and twenty-five feet high. From an elm, however, it can readily be distinguished, for its fruit is a globular drupe instead of a dry samara. At maturity these drupes are nearly black, and somewhat larger than those of the southern hackberry. Its leaves also principally differ from those of that species in being sharply serrate. Few trees are as widely distributed through North America, although in some places, as New England, it occurs but seldom. Its indifference to soil and climate, however, makes it present a number of forms. Often it grows with the box-elders and red cedars when its presence is vigorous and attractive. In cultivation its desirability seems to be comparatively little appreciated, although, as the preceding species it retains its green foliage until late in the season.

A dwarf form exists, very like this species, which is called *Celtis pumila*.



THE MULBERRY FAMILY.

Moraceæ.

Trees or shrubs, mostly with a milky juice and with simple, alternate or opposite petioled leaves with large, early-falling stipules; and small flowers, either monæcious or diæcious which grow in axillary clusters. Petals: none.

RED MULBERRY.

Morus rubra.

FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
Mulberry.	Crown, round, dense; branches, spreading.	15-60 feet.	Texas and Florida to Vermont and westward.	April, May. Fruit: June.

Bark: greyish brown; rough and separating into plates. *Leaves*: three to seven inches long; ovate; approaching orbicular, with pointed apex and rather cordate base; or frequently occurring on vigorous shoots with unequal lobes at the sides when the sinuses are rounded; coarsely serrate; thin; yellow-green and rough on the upper surface when young, becoming dark bluish green and smooth; paler and downy or smooth below. *Ribs*: whitish and distinct. *Flowers*: growing in axillary, catkin-like spikes; either diæcious, or monæcious usually the latter. *Fruit*: similar in appearance to a long, wild blackberry; red, turning when ripe to a rich, dark purple; edible; sweet.

Sometimes when the spring takes a precocious frolic small leaves burst out on the mulberry in the low country as early as January and by the incoming of March the fruit, although it does so innocently, dangles temptingly to some northern blast which swoops down upon it and chills even the sap which so merrily is running to the tree's top-most tips. So is often disproved the old superstition of western countries that frost ceases as soon as the mulberry comes into leaf. The fruit which has too insipid a flavour to be much eaten, is being considerably made into syrups.

M. alba, white mulberry, an exotic species, is much planted about habitations. By its white, pinkish tinted fruit it is known and because its leaves are smooth and lustrous on both sides. In the east they have long been the favourite food for silk worms.

Broussonetia papyrifera, paper mulberry, is frequently seen in the south where it has escaped from cultivation, it being originally an introduced tree from China and Japan. Its leaves might very readily be mistaken for those of *Morus rubra*. The fleshy fruit, however, is globular, or club-shaped and not edible.

THE MULBERRY FAMILY.

OSAGE ORANGE.

Tôxylon pomiferum.

FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
Mulberry.	Spreading.	20-60 feet.	Texas and Missouri to Kansas.	May, June Fruit: Oct., Nov.

Bark : brown, ridged. *Spines* : about three inches long, straight, stout. *Leaves* : ovate, or ovate-lanceolate, long pointed at the apex and rounded, or sub-cordate at the base, pinnately-veined; entire; bright green and glabrous at maturity. *Flowers* : dioecious; axillary; the staminate ones growing in racemes; the pistillate ones in rounded heads. *Fruit* : growing in a large, yellowish and globular ball.

A very beautiful tree is the osage orange when it stands alone and its ripe golden balls of fruit gleam through its vividly green and lustrous leaves as though they were so many large oranges. Sometimes it is thus seen in the east where in rich soil it has sprung up spontaneously. And hardly less attractive is it when growing through its natural range as a hedge plant. So thick and abundant is then its foliage that it seems as though a bird could hardly slip through its meshes. It is in fact said by ones that "claim to know," that it is used as a hedge about fruit gardens for the very purpose of keeping out these unscrupulous marauders; its long spines greatly impeding their passage through the thickets. The hedges are not very high, but to ask why the birds do not fly over them would be perhaps too suspicious a question. The plant belongs to a monotypic genus. Its bright orange wood is hard and durable, while the root's bark is gathered by the country people and made yearly into a yellow dye.



THE MISTLETOE FAMILY.

Loranthaceæ.

A large group mostly tropical of parasitic herbs, or shrubs with green colouring matter and which choose as hosts woody plants. *Leaves* : simple; opposite; evergreen in our species. *Flowers* : regular, very variable in growth and habit. *Fruit* : a round, fleshy berry enclosing a solitary seed.

AMERICAN MISTLETOE.

Phoradendron flavescens.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Mistletoe.	Greenish.	Scentless.	Florida to Pennsylvania.	Fruit: August, September.

Flowers : insignificant; growing in axillary spikes. *Berry* : white; sessile. *Leaves* : oblong, or oblong-lanceolate rounded at the apex and tapering at the base

into the petiole; entire; leather-like; yellowish green, smooth. A branching shrub, mostly glabrous with very brittle twigs at the base.



PERHAPS in the golden sunlight of an autumn day the mystic mistletoe appears the more beautiful as strong lights play through, and lighten its yellowish green foliage. As it is parasitic on deciduous-leaved trees it has at this season a dusky background which throws it strongly into prominence. So vigorous is often its growth on the trees that it hangs from their boughs in large bunches. From the oaks, gums and red maple it displays first its insignificant bloom and later its little pearl-like berry.

Going slowly along the St. John's river, where fairly it mantles many of the trees, the yellow tint of its foliage could be seen from a long distance. It, and the water hyacinth, seemed to be the only plants that were known by name to the purser of the boat who journeyed on, although he had gone up and down the river for eighteen years, and he took the greatest delight in pointing it out over and over again to the passengers. The very name "mistletoe" had for him some potent charm.

In European lore the mistletoe is one of the plants that has been looked upon as an embodiment of lightning, probably because its branch is forked, and in almost every country it has had ascribed to it virtue of various sorts. As a cure for epilepsy and nightmare, a protection against sorcery, it has among innumerable other things been much revered. Its parasitic growth proclaimed it to be of divine origin; the missil-bird, or again the mistletoe thrush, at the direct instigation of the gods being believed to have first deposited its seeds on the branches of trees.



THE SANDALWOOD FAMILY.

Santalaceæ.

In our range embracing a group of parasitic shrubs, or herbs with simple, entire, exstipulate, alternate, or opposite leaves and mostly greenish, perfect or imperfect flowers. Petals: none. Fruit: a nut or drupe, containing one seed.

BUCKLEYA. (Plate XLIX.)*Buckleya distichophylla.*

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Sandalwood.</i>	<i>Greenish.</i>	<i>Scentless.</i>	<i>Paint Rock, N. C. and adjacent Tennessee.</i>	<i>May. Fruit: September.</i>

Flowers : minute ; diœcious ; the fertile ones solitary and terminal at the end of short twigs, with four sepal-like bracts, the sterile ones smaller, growing in a cluster, and having four stamens. *Drupe* : oblong, with distinct furrows and dotted finely with orange colour. *Leaves* : opposite or nearly so, in two ranks ; ovate-lanceolate, pointed at the apex and pointed or rounded at the base ; entire ; thin ; pubescent or glabrate. *Bark of twigs* : greyish ; erect ; branching. An ascending, slender shrub, ten to twelve feet high ; parasitic.

Buckleya is a strange plant and, with the exception of its foliage being delicate and graceful, would be rather an uninteresting one, were it not that it is so exclusive in its habitat and was for so long a puzzle to scientific men. Of all the rare plants in America it is one of the most rare. At present its only known stations are near Paint Rock, North Carolina, and Wolf Creek, Tennessee. As early as 1816 the plant was collected by Mr. Thomas Nuttall, who, returning from the west, travelled up the valley of the French Broad River. He referred the species to the genus *Borya*. More than twenty years later, however, Mr. S. B. Buckley visited Paint Rock and making collections from the shrubs sent his material to Dr. Torrey, who, recognising the real character of the plants, dedicated in Mr. Buckley's honour a new genus to embrace them.

When Dr. Asa Gray first found it at Paint Rock he took away a root which was eventually planted at Cambridge, Mass. Here it grew for many years, but could never be propagated.

Eventually, Professor Sargent went to Paint Rock and found the plants in fruit. Many of the seeds he then carried to the Arnold Arboretum, where they were sown and began to grow satisfactorily. In the meantime, however, the fact that the plant was a parasite became known through experiments made at Biltmore and that to secure its absolute well-being it should be provided with a host plant. It greatly prefers, it would seem, to live on the roots of *Tsuga Canadensis*. That the old plant at Cambridge lived so long without this aid was probably because in the transplanting of it Dr. Gray had carried off with its roots enough native material for it to subsist on. The peculiar little nuts of Buckleya are not unpleasantly flavoured and very abundant in oil.

NESTRONIA.*Nestronia umbellula.*

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Sandalwood.</i>	<i>Greenish.</i>	<i>Scentless.</i>	<i>Alabama to Virginia.</i>	<i>April, May.</i>

Flowers : diœcious ; the staminate ones growing in axillary umbels, the calyx



PLATE XLIX. BUCKLEYA. *Buckleya distichophylla*.
(147)

top-shaped with four or five rounded segments. *Stamens*: four or five; short. *Pistillate flowers*: solitary; axillary, their tubes long and lobes very short; glaucous. *Drupe*: globose; reddish purple. *Leaves*: small; opposite with slender petioles oblong or ovate; entire; pinnately-veined; thin; bright green above, paler below; glabrous on both sides. A low branching shrub, one to three feet high, parasitic.

Growing in woods that border streams, or those composed of pines we sometimes find this plant which is the representative of a monotypic genus of the southeastern United States. Usually it is parasitic on the roots of the yellow pine, *Pinus echinata*, or other species of pines and especially it has a fondness for the black oak, *Quercus velutina*.

BUFFALO-NUT. OIL-NUT. RABBIT-WOOD.

Pyruldría pubera.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Sandalwood.	Greenish.	Scentless.	Georgia to Pennsylvania.	May.

Flowers: tiny; diœcious; both sorts growing in terminal racemes. *Staminate racemes*: compact, with many flowers, their calyxes being from three to five cleft. *Pistillate racemes*: short with few flowers the calyxes of which are top-shaped and adnate to the ovary. *Fruit*: a pear-shaped, fleshy drupe, showing at its apex the five calyx-lobes. *Leaves*: alternate; oblong or obovate, pointed at the apex and rounded or tapering into the petiole at the base; entire; thin; especially pubescent underneath when young. A parasitic shrub, two to fifteen feet high with greyish branches.

In Cherokee County, Georgia, this straggling shrub was discovered by the elder Michaux, when he was making his first visit to the mountains. It there grew in rich, shaded soil. While its bloom is most insignificant, the leaves are very attractive and its curious fruit, similar in shape to that of a pear, has suggested its generic name. Not until the buffalo-nut had been experimented with at Biltmore was it successfully propagated, but the like experience there concerning buckleya furnished a strong clue to its being of parasitic nature. For its hosts it selects often the roots of the strawberry shrub, *Butueria fertilis*, on which it sometimes wreaks great harm. It is, however, by no means restricted to this species. The endosperm of the seed is very oily while the roots are marked by their disagreeable odour.

By the mountaineers the plant seems to be wholly known as the "rabbit-wood," for these animals gnaw its bark to such an extent that it is quite unusual to find one which has not been more or less peeled.

THE BIRTHWORT FAMILY.

Aristolochiaceæ.

Including a number of herbs, or shrubs either acaulescent or with erect, or twining leafy stems. Leaves: either basal, or alternate on the stems; usually cordate, reniform or entire. Flowers: perfect, rather large, terminal or axillary and growing solitary, or in clusters. Petals: none.

LARGE-FLOWERED ASARUM.

Asarum shuttleworthi.

FAMILY .	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Birthwort.	Greenish yellow, mottled with brown and purple.	Like ginger.	Virginia and North Carolina.	June, July.

Flowers: solitary; growing toward the ground on a smooth peduncle which springs from the fork of the leaves. Calyx: campanulate, not contracted in the throat, with three spreading and somewhat unequal lobes; bluntly pointed at the apex, marked within with deep reddish purple. Petals: none. Stamens: twelve, adnate to the ovary. Filaments: very short. Styles: six, minutely two-lobed. Leaves: one or two arising from the base, with long smooth petioles; broadly ovate, or orbicular; bluntly pointed at the apex and deeply cordate at the base, the sinuse narrow; entire: bright green above, lighter below; glabrous; thick; evergreen. Rootstock: branched.

To the attention of plant lovers this species of asarum was first forcibly brought by Dr. Small, and in its woody mountainous home, as well as in cultivation, it is perhaps the most valuable of the interesting genus. Although its flowers are not showy, they are very quaint, while the vigorous foliage has a cheerful, sprightly look throughout the winter and still appears fresh in early spring. The rootstock is noted for its flavour being similar to that of ginger. The flowers exhale the odour of the earth, in which so often they are nearly buried.

A. Virginicum, Virginia asarum, or wild ginger, is not so large a plant as the preceding species and bears a smaller flower which is considerably contracted in the throat. Often as many as three small, orbicular and cordate leaves arise from the base of one plant, and its blossoms also are quite abundant. From Georgia to Virginia it occurs in woods, and in the autumn the country people go forth to collect its rhizomes for medicinal uses. During the winter the leaves which have lasted over, emit when bruised a delightful fragrance.

A. Canadense, wild ginger or asarabacca, is perhaps the most generally known and widely distributed species of the genus. The flower's calyx lobes are lanceolate, pointed and recurved, and the leaves, as well as other parts

of the plant, have a conspicuous, velvety pubescence. The rootstock is flavoured something like ginger.

A. arifolium, halberd-leaved asarum, I found in bloom on mountains bordering North Carolina, which were not very far distant from the limit of its northern range, Virginia. Its large hastate leaves quickly told its species, although at times they are known to occur almost heart-shaped. It also bears small flowers which grow very closely to the ground. In texture the leaves are not nearly so thick as those of *A. Virginicum*, although they too endure throughout the winter.

DUTCHMAN'S PIPE. (Plate L.)

Aristolóchia macrophýlla.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Birthwort.	Greenish and purplish brown.	Scentless.	Tennessee and Georgia to Pennsylvania and westward.	May, June.

Flowers: growing on long, axillary peduncles which have rounded, clasping bracts near their middle. *Calyx tube*: inflated; curved upward and becoming contracted in the throat; the limb three-lobed; spreading and purplish brown. *Stamens*: six. *Capsule*: oblong, sometimes four inches long. *Leaves*: often a foot long, with slender petioles; orbicular or broadly reniform, pointed at the apex and deeply cordate at the base, entire; thin; softly pubescent underneath, especially when young. A smooth, woody, branched vine.

Twining over rocks and trees in the more northern parts of the southern states, sometimes growing to an astonishing length, this adventurous vine throws out so abundantly its great leaves that it is sometimes difficult to find its stems and flowers. When the latter come to view, however, they are very quaint, as the curious curving of the calyx with its spreading limb forms a structure very like an old Dutch pipe. As a genus this one is remarkable for the diversity of its members in colour, size and even odour. All are interesting plants. While through our range there are other species than those that have been included, it is thought that enough have been mentioned to give a showing of the group.

A. tomentosa, woolly pipe-vine, bears a specific and common name suggested, no doubt, by the dense white tomentum which covers its every part. Aside from this trait it is a similar vine to the Dutchman's pipe although its flowers and leaves are smaller, the latter measuring at most about five inches in length. From North Carolina, it occurs in rich woods to Alabama, Missouri and Florida.

A. Serpentina, Virginia snake-root, an erect, leafy herb, is considerably known through our district, the people collecting its fibrous, aromatic roots in the autumn to use in medicinal ways. In dry woods it grows and especially in rich leaf mold which has found a lodgement in crevices of rocks.

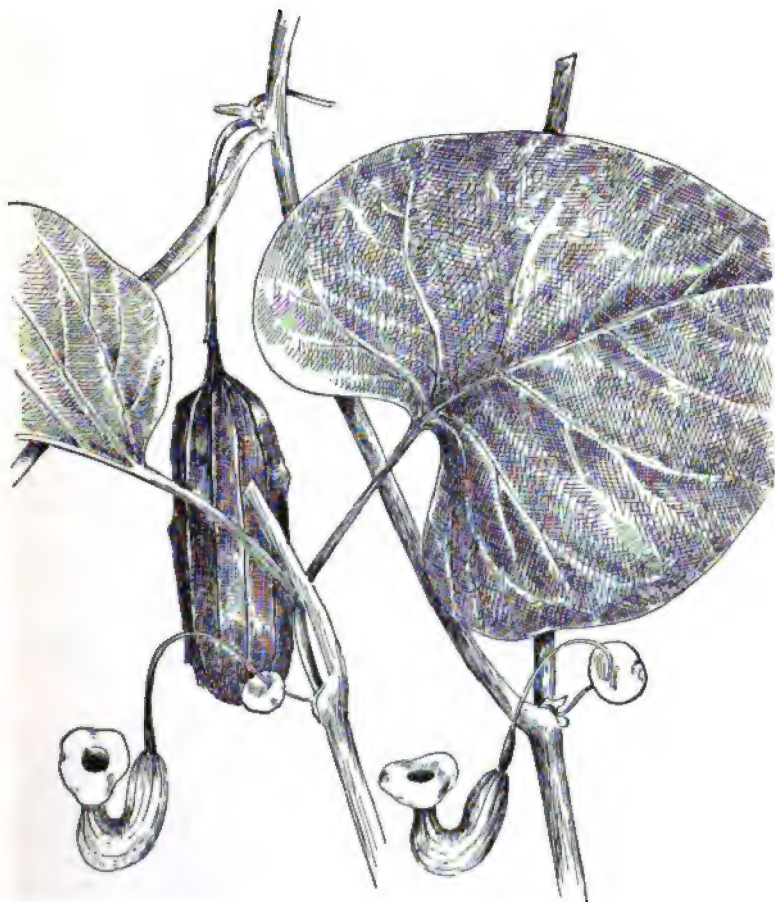


PLATE L. DUTCHMAN'S PIPE. *Aristolochia macrophylla*.
(151)

Its leaves are ovate, or ovate-lanceolate, long pointed at the apex and deeply and narrowly cordate, or even hastate at the base. They are very thin, and roughly pubescent on their undersides. At the ends of scaly, basal branches the flowers grow singly and in comparison with those that have formerly been cited, are extremely small. The calyx tube curves very much like the letter S.



THE BUCKWHEAT FAMILY.

Polygonaceæ.

A large family represented in most portions of the world and which includes trees, shrubs, vines and herbs, with simple, alternate, opposite or whorled and mostly entire leaves. By the jointed stems and stipules, which at the bases of the leaves form a sheathing, united structure called the ochrea, most of our species are easily identified. The flowers are small, perfect, regular and grow in variously arranged inflorescences. Petals: none. Fruit: an achene.

ERIOGONUM. (Plate LI.)

Eriogonum tomentosum.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Buckwheat.	White.	Scentless.	Florida to South Carolina.	July-September.

Flowers: small; numerous; growing in spreading, leafy cymes at the ends of the branches and subtended by a campanulate, toothed and pubescent involucre. *Calyx:* six-parted, the unequal segments spreading and pubescent on the outside. *Stamens:* nine; exserted, their filaments thread-like. *Basal leaves:* tufted; ob-ovate-oblong; entire; green above, brick coloured underneath, both sides being covered with a dense velvety and reddish tomentum. *Stem leaves:* oval or ovate; sessile; mostly whorled in fours about the rounded stems which appear silvery from their grey tomentum. An erect, branching herb, two to four feet high.

In its blowing time there is hardly a prettier member of the genus than this leafy herb from which the tiny white blossoms appear to burst at almost every point. It grows through pine barrens where often a few of its lingering flowers are to be found even so late in the season that its leaves have turned to their customary shade of burnt orange.



PLATE LI. ERIOGONUM. *Eriogonum tomentosum*.
(153)

BRUNNICHIA.

Brunnichia chirrhosa.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Buckwheat.	Greenish.	Scentless.	Florida to South Carolina and northwestward.	April-June. Fruit: August.

Flowers: small; clustered in long, slender racemes. *Calyx*: campanulate; five-parted, winged at the base; persistent. *Stamens*: exserted. *Fruit*: oblong, enclosed within the greatly enlarged calyx. *Leaves*: alternate, with slender petioles, the ochreæ obsolete or wanting; ovate or ovate-lanceolate; long pointed at the apex and squared or sub-cordate at the base; entire; bright green and glabrous above, slightly pubescent underneath. A much branched shrubby vine, which climbs by means of thread-like tendrils at the ends of the branches. *Stem*: smooth; grooved.

Especially in fruit is this climber attractive, for in the season of flowers its bloom is too insignificant to make much of a show. Along the banks of streams it grows where it is often found climbing over shrubs close at hand.

PENNSYLVANIA PERSICARIA.

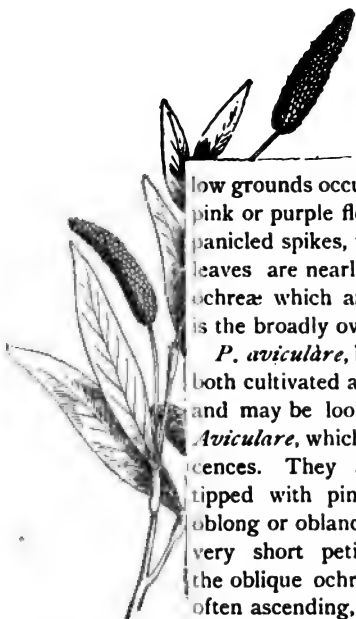
Polygonum Pennsylvanicum.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Buckwheat.	Deep pink.	Scentless.	Texas and Florida northward and westward.	July-September.

Flowers: growing in erect, paniced and bracted spikes, which are dense and cylindrical; their peduncles having glands on their surfaces. *Calyx*: five-parted. *Stamens*: eight, at most. *Style*: deeply two-cleft. *Achenes*: lenticular; smooth. *Leaves*: alternate; petioled; and with cylindric ochreæ which are without bristles; lanceolate, long pointed at the apex and tapering at the base into the petioles; entire; finely ciliate; the upper ones rough and disagreeable to the touch. *Stems*: erect; simple or branched; glandular viscid above.

The genus *Polygonum* is one that is very large and we see it abundantly represented by such plants as the present one and the common smartweeds, or knotweeds. As it has been divided into several sub-genera a few of the most important representatives, serving as types of the sections and which occur within our range, have been selected to be mentioned. There are of course hosts of others. By the people they are not much regarded, being scorned as common things unless as *Polygonum punctatum* they have some reputed virtue. Its tiny white blossoms which emit a peculiar scent are made into poultices, used to relieve sprains and bruises. Along the Tallyrand road near Jacksonville, Fla., we found an old man gathering it for this purpose.

That the genus is commonly called buckwheats is said to have originated from the fact that the old Saxon word for beech is buck, and with the beech the plants were associated because of a similarity in the triangular fruit of certain of the species.



Lady's Thumb. assumes a twining habit.

Of the sub-genus *Persicaria* the last described species and the one which follows illustrate its peculiarities.

P. Persicaria, lady's thumb, a little plant from Europe, has now become well naturalised in this country and in low grounds occurs prolifically as a weed. Its small deep pink or purple flowers are packed closely in solitary, or panicked spikes, while the alternate and linear-lanceolate leaves are nearly sessile. At their bases are cylindric ochreae which are bristly. Another point of distinction is the broadly ovoid, or at times triangular, achenes.

P. aviculare, knotgrass, or door-weed, occurs through both cultivated and waste ground as a very common weed and may be looked upon as a type of the sub-genus, *Aviculare*, which bears its flowers in axillary inflorescences. They are small with greenish calyxes, faintly tipped with pink. There are numerous small, linear-oblong or oblanceolate leaves which at the bases of their very short petioles appear to be somewhat jointed to the oblique ochreae. While the plant has prostrate, or often ascending, branched stems, it is not one that ever

P. sagittatum, arrow-leaved tear-thumb, represents as does the next species that sub-genus of the polygonums *Echinocaulon*, the members of which climb over other plants by means of the small, recurved prickles which arm the angles of their slender stems and petioles. The small, deep pink flowers of this species grow thickly in rounded, terminal clusters and the achenes they later produce are three-angled. At the bases of their petioles the lanceolate-sagittate leaves have entire and oblique ochreae.

P. arifolium, halberd-leaved tear-thumb, extends hardly further southward than South Carolina. Its flowers are greenish or deep pink and the achenes are lenticular. Its notably large and hastate leaves have at the bases of their long petioles ochreae fringed at their summits and bristly about their lower parts.

P. dumentorum, copse or hedge buckwheat, serves well as a type of the section, *Tiniaria* which includes those polygonums with a twining habit of growth. Often the branched stem of this species is very long. Its leaves are ovate, deeply heart-shaped, or approaching hastate at the base while the ochreae are quite smooth. From axillary racemes the flowers nod and are for the most part a greenish yellow. As well as in the south the plant

occurs on some of the middle western prairies. It is probably naturalized from Europe.

JOINTWEED.

Polygonella macrophylla.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Buckwheat.	Deep crimson.	Scentless.	Florida.	September, October.

Flowers: showy, small; growing profusely in raceme-like panicles. *Calyx*: with five petal-like rounded sepals. *Stamens*: eight, included or slightly exserted. *Leaves*: alternate; sessile; spatulate or oblanceolate, rounded at the apex and tapering at the base; entire; parallel-veined; smooth. *Stem*: woody at the base; jointed; deep red, or the young growth greenish.

So gay and showy is this plant's spray of blood tinted blossoms that it appears very handsome as it occurs in sandy soil along the coast of West Florida. Made into a bouquet with the more fleecy and pure white bloom of *Eriogonum tomentosum*, an effect is produced surprisingly beautiful to those who know not the possibilities of the buckwheat family.

P. Americana, southern jointweed which hardly occurs further northward than Georgia, bears a fleecy spray of tiny white, or pink blossoms, which in their racemes grow so closely that they make quite a fine showing. The calyx, of a thing so small, is rather complicated, as the three inner segments have tiny cordate wings while the two outer ones, as they grow old, become reflexed. The pedicels are very fine and the stamens mostly included. About the growth of the plant there is a wiryness and its fine, linear-spatulate stem leaves seldom more than half an inch long, produce the effect of a pine-like, graceful foliage. The stems are inclined to scale and are covered with a slight bloom.

P. gracilis is found in old fields or dry pine barrens from Florida to South Carolina. In appearance it is light and fluffy being much branched above and bearing in a loose paniced raceme a number of small white, pink or greenish flowers. Their sepals are all upright. The leaves are inconspicuous and linear while the closely jointed stems grow erectly.

P. parvifolia an unusually handsome species bears also in a fleecy spray tiny white, deep pink or even yellowish flowers, the outer sepals of which are recurved. From the base it is profusely branched and the foliage is sessile and spatulate. Through September it remains in bloom and clings to the coast line in sandy soil. Near Palm Beach there is a spot where it grows abundantly.

THE PURSLANE FAMILY.

Portulacacææ.

In our range including three genera of mostly fleshy herbs with entire, alternate or opposite leaves, and bearing perfect and regular flowers, the calyx, with but two sepals.

· SPRING BEAUTY.

Claytonia Virginica.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Purslane.</i>	<i>White veined and tinted with pink.</i>	<i>Scentless.</i>	<i>Texas and Georgia northward to Nova Scotia.</i>	<i>March-May.</i>

Flowers: a few growing in a very loose, terminal raceme. *Calyx:* with two ovate and persistent sepals. *Corolla:* with five rounded petals, delicately veined with pink and slightly united at their bases. *Stamens:* five, on the corolla. Pistil one; style, three-lobed. *Stem leaves:* opposite; linear, or linear-lanceolate, bluntly pointed at the apex and narrowing into petioles, being considerably shorter than the basal leaves. *Stem:* erect or decumbent, rarely branched; glabrous. The plant arises from a tuberous root.

About the spring beauty there is a tenderness, a delicacy of expression which is altogether charming. It is also a bold little thing. Very early in the spring it pushes through the ground and almost before one has had a chance to take a second look about, it spreads, in some places, a sheet of bloom which extends almost as far as the eye can see. Naturally it is a wild, woody creature belonging exclusively to moist and frequently shaded places. As soon as it is picked it fades, becoming indeed a miserable looking object.

C. Caroliniana, Carolina spring beauty, throws out a flower which is very similar to that of the above species. Its leaves, however, are strongly ovate, or ovate-lanceolate while those on the stem taper into quite long petioles. The plant grows more nearly erect than does *Claytonia Virginica* and often its bloom is quite abundant. Through the Alleghanies, at high elevations, it is a forerunner of the spring, but, somehow its grace is not quite as ethereal as that of its relative.

THE PINK FAMILY.

Caryophyllaceæ.

A widely distributed group of annual or perennial herbs with opposite and entire leaves and stems most often swollen at the nodes. The flowers usually are regular and perfect, and bear as fruit capsules.

Besides those of the pink family that are herein mentioned in detail, there are through our range as examples of the order two well naturalised plants which constantly confront the flower seeker. One is the homely bouncing bet, or old maid's pink, *Saponaria officinalis*, which is indigenous in Europe. Its large white and pink blossoms, occurring most often in a double form, are seen about old farm houses and straggling through broken-down fences. That its juices abound in saponin, a substance similar to soap in having cleansing properties, seems to be well known to the country people; also that it was once exclusively a garden plant. One day a young lad in the Alleghanies handed me one of the flowers with the quaint remark: "that's a tame flower."

The corn cockle, or corn rose, *Agrostemma Githago*, is another European plant. It is a pretty thing especially when its large pinky red, or purplish flowers blow through and lighten the fields of grain. The plant seeds itself very freely and thus secures every year a wider distribution. Indeed it gives trouble enough to the poor farmer as the intermingling of its black seeds with grain destroys the whiteness of his flour. In them moreover is contained a poisonous element so strong that bread into which they have found their way is known to be injurious.

STARRY CAMPION. KING'S CURE ALL.

Silene stellata.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Pink.	White.	Scentless.	Arkansas and South Carolina northward.	June-September.

Flowers: showy; growing on long bracted pedicels and clustered loosely in spreading panicles. *Calyx*: campanulate; swollen; with five sharp-pointed lobes. *Corolla*: with five deeply fringed and delicate petals. *Stamens*: ten; exserted. *Pistil*: one; styles, three. *Pods*: globose-ovoid. *Leaves*: sessile; whorled in fours, or opposite in pairs at the lower and upper part of the stem; lanceolate or ovate-lanceolate; ciliate; rather rough. *Stem*: two to three feet high; leafy; pubescent.

Perhaps there is no other tradition which so indiscriminately clings to certain plants as that they are efficacious in curing snake-bites. Almost any old inhabitant of a village, or mountainous district can tell some tale of

such an one which he has either seen, or "heard on." The starry campion even with its fleecy and innocent-looking blossom has a strong reputation for assuaging this disorder. Of it, Dr. Gray says, in relating some of his experiences at the foot of Grandfather Mountain, in North Carolina :

"We had frequently been told of an antidote to the bite of the rattle-snake and copper-head, not unfrequent throughout this region, which is thought to possess wonderful efficacy, called Turman's snake-root, after an Indian doctor who first employed it ; the plant was brought to us by a man who was ready to attest its virtues from his personal knowledge, and proved to be the *Silene stellata* ! Its use was suggested by the markings of the roots beneath the bark, in which these people find a fancied resemblance to the skin of the rattle-snake. Nearly all the reputed antidotes are equally inert ; such herbs as *Impatiens pallida*, etc., being sometimes employed ; so that we are led to conclude that the bite of these reptiles is seldom fatal, or even very dangerous in these cooler portions of the country."

Silene Baldwinii.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Pink.</i>	<i>White or pale rose.</i>	<i>Scentless.</i>	<i>Florida and Georgia.</i>	<i>April, May.</i>

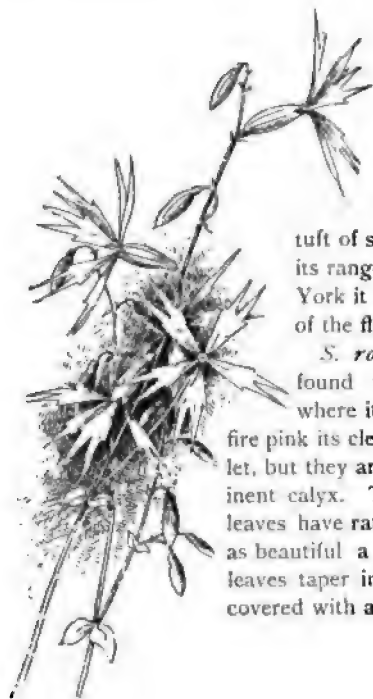
Flowers: large ; growing solitary and in terminal and lateral cymes. *Calyx*: tubular; inflated with five long-pointed teeth; slightly viscid. *Corolla*: with five clawed petals; long; obovate; deeply fringed at the apex and ciliate along the sides. *Stamens*: ten; their filaments but little longer than the lobes of the calyx. *Leaves*: those about the base spatulate; those of the stem; opposite; oblong or oblanceolate; rounded at the apex and tapering at the base; sessile; entire; ciliate and with many fine white hairs on both surfaces. *Stem*: six to twelve inches high; silky pubescent.

The peculiar physiognomy of this gay flower as it crops up through low, shady woods would always, it would seem, proclaim it to hold a different position in the kingdom of plants than its brilliant relative, the fire pink. But when, on one occasion, I endeavoured to point out to a native of the mountains that they were not the same pinks, he regarded me with strong amazement. Such knowledge was a foolishness for which he had no time.

S. Carolinidna, wild pink, is the name of the low plant which grows usually five or eight inches high, and bears attractive, vivid pink blossoms that raise themselves coquettishly above their thick clump of spatulate basal leaves. On the stem the foliage is oblong, or lanceolate and sessile. The long calyx is often inflated and, as the upper parts of the plant, covered with a viscid pubescence. On the last day of July near the summit of one of the high peaks of the Alleghanies I found a solitary blossom gleaming from the crevice of a rock.

S. Virginica, fire pink, or Virginia catchfly, is perhaps the most brilliantly charming member of the family as it is seen flourishing freely in a wild

state; a gleam of flaming scarlet often proclaiming its presence in some dry, midsummer woods, as it waves conspicuously its two-cleft petals.



Silene Virginica.

It is moreover a notable catchfly, the long viscid calyx being capable of holding within its grasp many a small mite that has had the temerity to climb the stem with the intention of plundering its nectar. From one to two feet high the plant grows and has, as well as stem leaves, a

tuft of slender, spatulate basal ones. Although its range extends to the southern part of New York it is in the south that it truly is a feature of the flora.

S. rotundifolia, round-leaved catchfly, is found through Georgia and Kentucky from where it extends into southern Ohio. Like the fire pink its cleft or lacinate petals are a brilliant scarlet, but they are only about half as long as the prominent calyx. This fact and that the orbicular-ovate leaves have rather a coarse look prevent it from being as beautiful a plant. The broadly spatulate basal leaves taper into winged petioles and the plant is covered with a densely viscid pubescence.

PINE-BARREN SANDWORT. (Plate LII.)

Arenaria Caroliniana.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Pink.	White.	Scentless.	Florida to New Jersey and New York.	April-July.

Flowers: small; growing in cymes at the end of the branches. *Calyx:* with five, ovate-oblong sepals. *Petals:* five, oblanceolate; considerably longer than the calyx. *Stamens:* ten. *Styles:* two to four. *Leaves:* opposite; growing on branches tufted about the base and on the flowering stem; imbricated; needle-shaped; sessile; seldom over one quarter of an inch long; grooved on the inner surface; recurved. Flowering stems, ascending; those about the base, woody and tufted.

Very pretty is this plant as it grows in the white sand of the coastal plain. Its little leaflets, which one might almost think were stipules, are always in pairs, and were it not for the tufted growth of leaves about the plant's base, the prim-looking blossoms would appear to be almost without foliage.



PLATE LII. PINE-BARREN SANDWORT. *Arenaria Caroliniana*.
(161)

THE WATER LILY FAMILY.

Nymphaedaceae.

Including herbs that grow in water with floating or occasionally immersed foliage and which bear large, solitary and axillary flowers.

YELLOW NELUMBO. YONQUAPIN. WATER CHINKAPIN.

Nelumbo lutea.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Water lily.	Pale yellow.	Fragrant.	Florida to Ontario.	July, August.

Flowers: four to ten inches in diameter and growing on long, naked scapes. *Sepals*: four or five. *Petals*: numerous; concave; rounded at their apices. *Stamens*: numerous; their filaments petal-like. *Pistils*: numerous and sunken in a large, top-shaped receptacle. *Seeds*: obconic. *Leaves*: one to two feet broad; floating, or raised with long petioles high above the water; orbicular; peltate; prominently veined; bright green and glabrous above, somewhat pubescent underneath.

There is no plant life, it would seem, which is more beautiful or wonderful in its ways of adapting itself to its surroundings than that of the water; and by none is this better displayed than the water lilies which float so peacefully on its surface. This great one is very much localised through its range and is a startling feature as it occurs in ponds through rice fields. Its general formation is similar to that of the well known white water lily, *Castalia odorata*; its sepals therefore gradate into petals and the numerous concentric rows of petals, in their turn, gradate into stamens—that is, if they do not accomplish this transformation in just the reverse order as is thought by a number of botanists. The tubers of this species are edible as are also its farinaceous seeds, which when ripe can be moved freely about with the finger in the sunken holes of the receptacle. To the Indians they have been a highly prized food.

Nelumbo Nelumbo, Indian lotus, or sacred bean, a native of the orient and Australia, is now locally introduced in this country and is beginning to be considerably seen in cultivation. Its great, gorgeous bloom is a deep, rich pink, or more rarely a pure white, while the concave leaves holding as dishes the rain, form for it a bold and artistic background. By the Egyptians the plant was dedicated to Osiris. Buddha, also, is said to have first been seen when resting on the flower. Brahma, we are told, came forth from the blossom and so it is enshrouded with much sacred and legendary lore.

Castalia odorata, sweet-scented white water lily, or water nymph, is the one of the genus most familiar to all and is generally distributed over the country. One of its peculiarities is that its fruit ripens under the water.

Before the plant flowers, sometimes, its tuberous roots are collected by the people, they being known to have medicinal properties.

C. reniformis is peculiar in having large reniform leaves, the narrow sinus of which extends to about their middle. Its extremely pretty and lustrous white flowers are very much like those of the water nymph.

Nymphæa advena, large yellow pond lily, or spatter dock, is common in the stagnant waters of ponds and the lower courses of streams where from under a green slime-like growth is heard in the springtime a mighty croaking from the bull frogs. The flower has from six to eight unequal sepals and coarse, fleshy petals which are shorter than the stamens. Its most attractive feature, however, is the rich, deep crimson at the base of these petals and under the stagnate disc. The odour it emits is not pleasant, in fact, in England the plant has on this account been called, "brandy bottles."

N. sagittifolia, arrow-leaved pond lily which occurs along the Atlantic seaboard from Florida to North Carolina, has attractive arrow-shaped leaves, the submerged ones being usually much larger than the ones that float. When dried they are as thin and crisp as tissue paper. The small flowers which are deep yellow resemble very much those of the spatter dock.



Nelumbo Nelumbo.

THE MAGNOLIA FAMILY.

Magnoliaceæ.

Trees or shrubs with simple, alternate, entire or lobed leaves, and large, solitary flowers; their stamens numerous and their pistils arranged on an elongated receptacle in the shape of a cone.

FRASER'S MAGNOLIA. LONG OR EAR-LEAVED
UMBRELLA TREE.*Magnolia Fraseri.*

FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
<i>Magnolia.</i>	<i>Straight.</i>	20-50 feet.	Florida and Mississippi to North Carolina.	May, June.

Bark of branches: reddish or grey with many wart-like dots, bitter. *Leaf-buds:* glabrous. *Leaves:* growing with slender petioles at the end of the branches; auriculate; long obovate or ovate-spatulate, pointed at the apex and narrowed at the base where are formed two side lobes; entire; bright green above, lighter below; thin; glabrous. *Flowers:* cream-white; fragrant; three to eight inches in diameter. *Calyx:* with three early-falling, petal-like sepals. *Corolla:* with six or nine long, obovate petals, blunt or bluntly pointed at the apex. *Stamens:* numerous; anthers, intorse, linear. *Cone of fruit:* four or five inches long; oblong; brilliant red at maturity, with coral coloured and fleshy seeds.

Among the magnolias, that group of individuals so interwoven with the silva and poetry of the south, this one is of especial interest. Of them all, it is the least widely distributed, choosing as its best loved home certain chains and ridges of the great Appalachian system, such as the Blue Ridge, the Black Mountains, or the Big Smokies. William Bartram, the first botanist to explore the higher peaks of the Alleghanies there discovered it; and indeed through the deep ravines of these mountains, growing side by side with the common hemlock it forms a contrast so striking and beautiful that it could hardly be overlooked. It was in August when I first saw it, and through its bright foliage the ripe fruit gleamed brilliantly. The seeds had burst open the pods and were hanging by filaments as misty and fine as the lines of a spider's web. In the way in which its leaves grow at the ends of the branches this magnolia resembles the umbrella tree. In fact, the mountain people call it indiscriminately by that name, as well as wild cucumber tree, mountain magnolia, Indian physic or even Wahoo, a name which is usually applied to *Ulmus alata*.

M. acuminata, cucumber tree which occurs northward as far as the southern part of New York, can be distinguished from the preceding species by its thin oval leaves which are pointed at the apex and mostly rounded at the base and which grow, moreover, scattered along the branches. Its

green cones of fruit suggest more nearly the shape of a cucumber than do those of any other of the genus. They as well as the fruit of *M. Fraseri* are used by the mountain people in an infusion with whiskey, or apple brandy for the prevention of intermittent fevers. About this practice the younger Michaux is said to have remarked: "that it would doubtless be much less frequent, if, with the same medical properties, the aqueous infusion were substituted."

M. macrophylla, great leaved magnolia or umbrella tree, is truly a remarkable sight when its fragrant, white flowers with their purple spotted centres are in blow among its mammoth leaves. Sometimes these latter measure over three feet long. In shape they are long-obovate, pointed at the apex and have two ear-like lobes at the base. On their undersides they are pale and covered with a bloom. The petals even measure seven or eight inches long while the sepals are shorter and rounded. In fruit the tree has still a lively air for its cones are a deep rose colour. The tree itself, however, is not very beautifully formed. It grows in cool, deep places from Louisiana and Florida to Kentucky and North Carolina, also appearing in Arkansas. In 1789 it was discovered near Charlotte, North Carolina, by the elder Michaux.

M. tripetala, umbrella-tree, or elk-wood, bears also very large leaves which, however, are ovate-lanceolate in outline, pointed at the apex and distinctively wedge-shaped at the base. They are when young covered on their under surfaces with a thick tomentum while their stout petioles are quite pubescent. At the ends of the branches these leaves grow in clusters in a way very suggestive of the ribs of an umbrella. The specific name, *tripetala*, is in reference to the three sepals which are very similar to the petals.

GREAT FLOWERED MAGNOLIA. SOUTHERN MAGNOLIA. BULL BAY. (Plate LIII.)

Magnolia foetida.

FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
<i>Magnolia</i> .	Round-topped.	60-80 feet.	Florida and Texas to North Carolina.	April-June. August northward.

Lower bark: brownish grey, with appressed scales about one inch in length. *Branches*: lighter in colour, thin, smooth. *Leaves*: entire; with stout petioles; ovate or oval, five to eight inches long and two to three inches broad; evergreen; thick; bright green above and shiny. The winter buds and petioles covered on the under side with a rusty-looking tomentum. *Flowers*: cream-white; very fragrant; seven, eight or twelve inches in diameter; solitary and terminal at the ends of the branches. *Sepals*: petal-like. *Petals*: six, nine or twelve; oval; concave. Base of the receptacle and lower parts of the filaments bright purple.



PLATE LIII. GREAT FLOWERED MAGNOLIA. *Magnolia foetida*.
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Fruit: large; ovate; rusty brown or yellowish green; very pubescent; with many pods. *Seeds*: glowing carmine; flattened or slightly triangular; when released from the pods they hang by threads.

It seems rather a pity that the specific name, *foetida*, should ever have been associated with this, the most beautiful flowering tree of our country, and especially as it is the one which it seems wisest to adhere to, if the rule of priority is sustained. But so far from being foetid these flowers exhale a scent of such intense sweetness that few can endure it for more than a short time. *Grandiflora*, the other specific name by which the tree is known, is also inappropriate, for there are species that bear even larger flowers. Perhaps it is because the tree's foliage is evergreen that in the far south it is often called, "the big Laurel."

M. Virginiana, laurel magnolia or sweet bay, is a small member of the genus and perhaps the one most generally known; for while mainly found east of the Alleghanies to Florida and Texas, it is hardy, indeed indigenous, as far northward as eastern Massachusetts. As long ago as 1584 the tree was brought into prominence by some navigators who found it on Roanoke Island, N. C., and who referred to it as: "the tree that beareth rind of the Black Synamon of which like Captain Winter brought from the Straits of Magellan." One of its most exquisite features is found in the young leaves, the under sides of which are glaucous and covered with fine hairs which produce a silky sheen. In comparison with other flowers of the genus these are quite small, but there is still a charm about them. They are so waxy, so well modelled and exhale a strong fragrance very like that of Fraser's magnolia. In early days the people of Pennsylvania observed that beavers ate greedily of the tree's fleshy roots, a knowledge which they utilised when baiting their traps for such game, and to which the common name of beaver tree is in allusion.

TULIP TREE. WHITE-WOOD.

Liriodendron Tulipifera.

FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
Magnolia.	Tall, columnar or pyramidal; branches spreading.	60-100 feet.	Vermont and Rhode Island to Florida and westward.	May.

Bark: reddish brown or grey; furrowed. *Branches*: curved and marked with narrow rings; aromatic. *Leaves*: long petioled; very broadly ovate, or nearly orbicular; broadly notched at the apex, rounded or cordate at the base and having four or more lobes, the sinuses between them rounded. Dark green and shiny above, paler below. *Flowers*: two inches high; tulip-shaped; erect and growing on stout peduncles. *Petals*: obovate; greenish yellow; orange coloured within; sweet scented. *Sepals*: reflexed. *Stamens*: numerous and growing in ranks on the receptacle. *Pistils*: forming in a column-like body upon the receptacle. *Fruit*: about three inches long, a cone of dry, oblong and acute carpels.

Although with the return of the flowering season the tulip tree bursts radiantly into bloom, it does so in rather an obscure way and many who pass under it are unconscious that it is fairly laden with exquisitely scented and strangely coloured flowers. This is because they are greenish on their outsides and thus as one looks up into the tree they blend in harmony with and seem to form a part of the leaves. Only when they are taken in the hand is the full beauty of the orange coloured marking within the cup appreciated. And these blossoms are well out of reach, for the tree is one of the tallest of the American forest. They drop, however, a good deal on the ground. With its lofty grey stem and crown of beautiful leaves the tulip tree is one of the most notable of our forests and attains in the Mississippi bottoms to a growth of exceeding luxury. In cultivation also it is a distinguished individual.

Of the young trees the smooth grey bark, which is very bitter, is collected by the people and used alone, or mixed with equal parts of dogwood bark, as a remedy for intermittent fevers. Those through the south, it seems, who know the tree well enough to thus claim its aid usually refer to it as the "yaller poplar," a name, however, which is rather unfortunate. The timber of the tree is, of course, very valuable.

ANISE-TREE.

Illicium Floridanum.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Magnolia.</i>	<i>Deep maroon.</i>	<i>Like anise.</i>	<i>Florida to Mississippi.</i>	<i>April.</i>

Flowers : large ; showy ; perfect ; solitary or a few together growing at the ends of leafy shoots. *Calyx* : with usually three sepals. *Petals* : numerous ; linear. *Stamens* : numerous. *Fruit* : rounded with pointed ovate, spreading valves. *Leaves* : long oblong, or oblanceolate ; taper-pointed at the apex and tapering into the margined petiole at the base ; entire ; glabrous ; thick ; evergreen. A shrub six to ten feet high ; the young twigs, greyish and somewhat angled.

The anise-tree is interesting, closely related as it is to the magnolias, and also because it is one of the beautiful features of southern sandy swamps. Its showy, dark coloured flowers remind us a little of the strawberry shrubs' blossoms, although they have not the same delicious scent, and to many the odour of anise which clings to the tree is not quite agreeable.

I. parviflorum, which occurs along the coast from Florida to Georgia, is known at once from the related species as its flowers have fewer and rounded, yellow petals.

THE CUSTARD APPLE FAMILY.

Anonacææ.

Including mostly aromatic shrubs or trees with simple, alternate and entire leaves and perfect, axillary flowers which have their petals arranged in two series. Fruit : usually fleshy.

CUSTARD APPLE. (Plate LIV.)

Asimina speciosa.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Custard apple.	Yellowish.	Scentless.	Eastern Florida and Georgia.	March, April. Fruit: June.

Flowers : large ; showy ; nodding ; growing in a raceme-like way on shoots of the preceding year and appearing before the leaves are much grown. *Sepals* : three ; ovate ; densely pubescent. *Petals* : six, in two rows, oblong, the three outer ones the larger and pubescent on the outside. *Fruit* : one and a half or nearly two inches long ; yellowish white ; obovate or oblong and containing few seeds. *Leaves* : oblong or narrowly obovate, bluntly pointed at the apex and tapering at the base into the margined, pubescent petiole ; when young covered on both sides with a dense and velvety yellowish pubescence, at maturity becoming glabrous on the upper side ; thick. A small shrub two to three feet high ; the young twigs covered with a tawny pubescence.

Through our range this genus of plants is well represented, and mostly its members are found in the sandy soil of pine barrens, or in dry strips along the coast. The custard apple and the species that follow would perhaps be the ones more generally encountered.

A. reticulata principally differs from the foregoing plant in that its leaves are but sparsely pubescent when young, soon becoming glabrous. They are from an inch to three and a half inches in length, oblong and of a pale, apple-green tone of colour. Also, they are thick, leather-like, and much reticulated. The flowers are among those which come into bloom before or just as the leaves develop.

A. pygmaea displays characteristics at variance with those of the already mentioned species. Its flowers, pale yellow, or green, turn as they fade to dark purple. They also appear after the leaves. These latter are long and narrow, blunt at their apices and tapering towards the bases. When mature they are quite smooth.

A. augustifolia belongs to the same group as *Asimina pygmaea* although it is to be noticed that the colour of its yellowish white flowers remains unchanged in age. Its linear, lanceolate, or oblanceolate leaves are on both sides smooth, and later than they the flowers appear singly in their axils.

A. triloba, North American papaw or custard apple, is perhaps the most



PLATE LIV. CUSTARD APPLE. *Asimina speciosa*.
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familiarly known individual of the genus and has a range which extends from Texas and Florida to the western part of New York. Sometimes it occurs as a small tree of about forty feet high, but it more often remains a large shrub. In either case it bears an abundance of large, shiny foliage which is obovate and noticeably thin in texture. The dark purple and axillary flowers blossom out at the same time as the young leaves appear. By its fleshy fruit, usually from three to five inches long, and which when ripe in October is a dark brown, the tree may always be identified. It is then fragrant and sweet. In districts where the tree is common it is much eaten as well as sent in quantities to the markets. Before it has attained maturity, it emits as do other parts of the plant a disagreeable odour.

A. parviflora is a low bush and altogether different looking from the papaw. Its very small flowers are not well coloured, being a greenish purple and they grow from the sides of the branches on short, woolly peduncles. The large, oblong, or obovate leaves are thin, and, as the young twigs, covered with a copper-tinted pubescence which to some extent they always retain. Often the fruits grow two together and are pear-shaped and fleshy.



THE CROWFOOT FAMILY.

Ranunculaceæ.

Herbs, shrubs or climbing vines, distinguished by their acrid sap and simple, or compound, alternate leaves, opposite, however, in the genus clematis; and regular, or irregular flowers, with their parts separate.

MARSH MARIGOLD.

Caltha palustris.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Crowfoot.	Bright yellow.	Scentless.	South Carolina to New Foundland and westward.	April, May.

Flowers: large; showy; clustered at the ends of the branched, hollow stems. *Calyx*: with from five to nine rounded, petal-like sepals. *Corolla*: none. *Stamens*: numerous. *Pistils*: five to fourteen. *Leaves*: those of the base with long petioles, reniform, or cordate, entire or crenate; the upper ones short petioled or sessile and sometimes nearly squared at their bases; bright green; glabrous. *Stems*: one to two feet high; erect or ascending; succulent.

In very early spring the marsh marigold spreads its golden yellow petals by the water's edge and has ever a sturdy, merry air. There is about it none of the singular fragility which characterises so many of the season's fore-

runners. Perhaps it has something the same look as a very prosperous buttercup. That it is a plant of the people might be presumed from the number of its old English names. "May-blob," it is called, "water blob," sometimes even "horse blob" and again it is extensively known as the cowslip which is boiled and used as a vegetable.

YELLOW PUCCOON. ORANGE ROOT. GOLDEN SEAL. YELLOW INDIAN PAINT.

Hydrastis Canadensis.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Crowfoot.</i>	<i>Greenish white.</i>	<i>Scentless.</i>	<i>Missouri and Georgia to New York.</i>	<i>April.</i>

Flowers : small ; regular ; solitary. *Calyx* : with three petal-like and early falling sepals. *Petals* : none. *Stamens* : numerous. *Fruit* : a head of crimson berries which resembles a raspberry. *Leaves* : those from the base with long petioles ; reniform and palmately-divided into from five to nine lobes, acute at their apices and sharply serrate. *Stem leaves* : two growing near its summit ; the upper one subtending the flower, and they being covered on the upper side when young with white hairs. *Stem* : about one foot high ; erect ; pubescent towards the summit. *Rootstock* : yellow.

So abundant is the foliage of the yellow puccoon and such a fine showing does it make that it puts rather to shame the more insignificant bloom. Through the oak barrens of middle Tennessee the plant crops up continually. There the people in the autumn go forth to gather its rootlets and the rhizomes, which are known to them as having drastic properties.

SHRUB YELLOW-ROOT.

Xanthorrhiza apiifolia.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Crowfoot.</i>	<i>Reddish purple.</i>	<i>Scentless.</i>	<i>Florida to New York.</i>	<i>April, May. Fruit: June.</i>

Flowers : tiny ; solitary, or two or three together growing in drooping axillary racemes on slender branches. *Calyx* : with five, ovate deciduous sepals. *Corolla* : with five small two-lobed petals. *Stamens* : five to ten. *Follicles* : yellowish green ; one-sided ; curved and containing at maturity one seed. *Leaves* : with slender petioles, clustered at the summit of the stem ; pinnate or bipinnate ; the five leaflets, sessile, ovate, divided, cleft and toothed ; thin ; glabrous. *A shrub* : one to two feet high with greyish bark, the stem within being a bright beautiful yellow. *Roots* : yellow ; astringent.

Of small shrubs there is hardly one more impressive throughout the year than this one, although for beauty, it relies not at all on its wine-tinted bloom. In its foliage rather lies its charm. This has a fern-like, graceful look very suggestive of such cool woods and shaded banks as those where it chooses to grow through the high Alleghany and Cumberland mountains. In the spring it is effective, and even quite as handsome in the autumn when



PLATE LV. LAKE SAPPHIRE.

As, sultry and heavy, the atmosphere enshrouded Lake Sapphire, a stillness also prevailed. Only the occasional buzzing of insects or the sharp whizz of a darning needle darting spasmodically about disturbed the scene's placidity. None less calm was the sheet of water lying at the mountain's base. Through the green grasses occasionally lighter colours shone streaked with red or yellow. Dense and high the wild flowers grew about the banks. Vines intermingled with them, and trees sprang from even the mountain's rocky side.

(LV.)

it turns to a warm, rich golden colour. Through the winter also its buds are highly tinted and have a silky sheen. In cultivation the yellow-root is hardy and is largely used as a ground cover, or under shrub in front of others that are larger. For such planting it is sent out from the Biltmore nursery by the tens of thousands. In September the people collect the rhizomes which they use something as alum and especially to cure sore mouths of children. The Indians from the plant's intensely bitter roots made one of their most valued dyes.

AMERICAN BUGBANE.

Cimicifuga Americana.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Crowfoot.</i>	<i>White.</i>	<i>Scentless.</i>	<i>Georgia to Pennsylvania.</i>	<i>July, August. Fruit: October.</i>

Flowers: growing in lateral and terminal wand-like racemes; one to two feet in length and usually compound; finely pubescent. *Sepals:* petal-like, early falling. *Petals:* small, two-lobed. *Stamens:* numerous. *Pistils:* three to eight, with minute stigmas. *Follicles:* stalked, two or three together, curved, inflated, tipped with a beak. *Seeds:* downy. *Leaves:* alternate, with long petioles, pinnately-divided, the divisions often again divided; leaflets, rather irregular, oblong to ovate, dentate and cleft, the terminal one, three-lobed; deep green; thin; glabrous. *Stem:* three to five feet high; leafy.

Waving their wands of fleecy white flowers high over the heads of mints and lilies and Indian pipes, the bugbanes fairly take possession of the late summer woods. Even those who care little for wild flowers must, it would seem, stop and inquire something of their history. As a genus they are all much alike, it being usually the botanists who stop and discriminate between the species. They are known moreover as having medicinal properties while in the mountains of North Carolina I found the belief to be almost universal that a tea made from them and strong enough to produce violent sweating would cure inflammatory troubles. It is mostly the following species, the black snakeroot, however, which is employed, and in such immoderate quantities do the people drink it that according to the saying of native doctors, they produce instead of curing, rheumatism and similar ills.

C. racemosa, black snakeroot, or black cohosh, with its more extended range than the preceding species, is well known through wooded places from Missouri and Georgia to Maine. Its ovate, or obovate leaflets are pointed at their apices while towards their bases they are narrowed or subcordate. They are much cut about their margins. The fluffy, attractive bloom of this species, surprises one when approached with a fetid, disagreeable odour. Its carpels are borne solitary, or in pairs and are not stalked. Besides having the medicinal properties already mentioned the plant is credited with the power of repelling plant vermin. The Indians, moreover, looked upon it as one of their rattlesnake masters.

C. cordifolia, heart-leaved snakeroot which occurs from Tennessee to southwestern Virginia, is a form very similar to the black snakeroot. It has, however, considerably broader and more deeply cordate leaflets.

WILD COLUMBINE.

Aquilegia Canadensis.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Crowfoot.	Red and yellow or white.	Scentless.	From the Gulf Region northward and westward.	April-July.

Flowers: one to two inches long; terminal; solitary and nodding from thread-like pedicels. *Calyx*: with five petal-like deciduous sepals. *Corolla*: with five tubular petals projected backward between the sepals into long, nearly straight spurs. *Stamens*: numerous; exerted, the innermost reduced to staminodia. *Pistils*: five with slender, exerted styles. *Leaves*: the lower and basal ones, petioled, and twice or thrice-divided into lobed and toothed leaflets; (the upper ones lobed or divided and nearly sessile) obovate; lobed and toothed, or entire; paler below than above. *Stem*: one to two feet high; branched; leafy; glabrous or slightly pubescent.

“ And from the rock-cleft rude
Up springs, with nodding bells, the columbine,—
And round her ever, in the solitude,
The wild bee's winglets shine.”

On many high places in the southern mountains, where the cliffs looked ablaze in the sunshine, we saw that the columbine was in bloom. There nodding from amid innumerable sprays of fine foliage, the blossoms, en masse, produced a startling effect. When looking closely at an individual it was not difficult to trace the much talked-of resemblances of its various parts to an eagle and a dove; it thus typifying power and peace. The long spur of this species especially is regarded as representing the horn of plenty; a single nectary, a liberty cap, while a five rayed star is suggested by the flower's full face. The range of the wild columbine also is very extended, so there has been good cause that the plant should long have been in the group talked of for the national flower. In ancient folk-lore the columbine was looked upon as the favourite flower of the lion.

A. coccinea, which resembles the wild columbine, has been found in Kentucky, Tennessee and Virginia. It is distinguished by its larger flowers and shorter, more abruptly contracted spurs.

A. australis, grows on limestone rocks near Marianna, Florida, and is a slender columbine with pale, green leaves and narrow, elongated sepals. In other respects it much resembles *Aquilegia Canadensis*.

DWARF LARKSPUR. STAGGER-WEED.

Delphinium tricolorne.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Crowfoot.	Blue or white.	Scentless.	Georgia to Pennsylvania and westward.	April, May.

Flowers: irregular; large; loosely clustered in a terminal raceme. *Sepals*: five,

irregular, the posterior one being prolonged into a long, slightly upcurved spur. *Petals*: four; the back ones projecting a spur enclosed in that of the sepals; lateral ones, small, rounded and raised on claws. *Stamens*: numerous. *Pistils*: three, forming in fruit as many widely-spreading follicles tipped with a beak. *Leaves*: with long, slightly pubescent petioles; palmately-divided into from three to seven linear, or obovate divisions which are again cut and toothed; bright green; rather thin. *Stem*: one to three feet high; erect; leafy; mostly pubescent. *Roots*: tuberous.

A plant of unusual and dignified aspect is the dwarf larkspur as it is seen growing through open, rocky woods, or cropping up along well shaded road-



Delphinium tricorné.

sides. That it is generally called stagger-weed is because it is poisonous to stock which in April eat of its young shoots. In wreaking this harm upon them, they, it would naturally be supposed, stagger about as though unconscious of their actions. The genus with its beautiful members is most notably represented through our range by the following individuals.

D. Caroliniānum, Carolina larkspur, becomes quite tall and is a slimmer plant than the stagger-weed,—that is when they are both well grown. The bright blue and white flowers which it bears are also rather small. Its linear leaf-segments are numerous and the stems pubescent. In open fields, or prairies the plant occurs and extends from the far south northward to Manitoba.

D. urceolātum, tall larkspur, grows at times taller than most men, and with its large leaves cleft into lanceolate segments and its very long, dense racemes of blue, or purplish flowers presents a most striking appearance. On the blossoms, which are smaller than

those of the stagger-weed, there is a downy pubescence, and a mark of distinction is their straight spurs.

Two other species of larkspurs that are met with through our range are *Delphinium Consolida*, the knight's spur, lark's-heel, or claw, which grows in waste places mostly and has been naturalised from Europe; and *Delphinium Ajacis*, a fugitive from gardens. The former of these two is in its manner of growth, spreading or divaricately branched and bears white or intensely blue flowers. The latter, commonly called Ajax's larkspur, has on

its united petals two marks said to be in imitation of the letters, A. and I. The legend in connection with this circumstance is that the plant sprang up where the blood of Ajax or Aiax touched the ground, he having in chagrin slain himself after the Greeks had awarded the armour of Achilles to Ulysses.

TRAILING WOLFSBANE.

Aconitum reclinatum.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Crowfoot.	Greenish yellow, or white.	Scentless.	Georgia to Virginia.	July, August.

Flowers : irregular ; growing on pubescent peduncles in loose axillary and terminal racemes, or panicles. *Sepals* : five, the upper one forming a conic-shaped helmet; the two lateral ones rounded and partly concealed within the upper one ; the lower ones, oblong. *Petals* : projected backward in the helmet as a sort of spur. *Stamens* : numerous. *Leaves* : alternate ; with long petioles ; reniform ; cordate at the base and palmately divided into three to seven pointed lobes which are again cleft and toothed ; thick ; dark green above, lighter below and covered with fine hairs. *Stem* : two to eight feet long ; trailing ; leafy.

Among the flowers that run riot over the Alleghanies, this one is seen by the borders of streams twining its tender stems in and out and spreading its curious flowers. They are not nearly so pretty as those of the wild monkshood nor do they seem to be so well known. And although the plant is possessed of medicinal properties, it is not much utilised in that way. Its roots are poisonous but their reputation is altogether much less alarming than that of the European species.

A. uncinatum, wild monkshood or friar's cap, bears the beautiful purplish blue flowers which grow on slender, curved pedicels and whose quaint shape has given rise to so many fancies and legends. Their slightly beaked and conic helmet is indeed a remarkable structure, while the side petals look very much like chin tabs.



Aconitum uncinatum.

CAROLINA ANEMONE. (Plate LVI.)

Anemone Caroliniana.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Crowfoot.	White, blue and purple.	Scentless.	Texas and Georgia northward and eastward.	March, April.

Flowers: solitary; growing at the ends of long, pubescent peduncles. *Involucre*: composed of sessile leaves, three to five cleft and quite remote from the flower. *Sepals*: sixteen to twenty, oblong-linear and petal-like, the outer ones mottled with blue and purple. *Petals*: none. *Stamens*: numerous. *Achenes*: very woolly. *Basal leaves*: with slender petioles and thrice divided into linear, or oblanceolate divisions which are again toothed and cleft. *Stem*: three to ten inches high, arising from a globose tuber.

More beautiful even than the wind flower is this exquisite anemone of the south which haunts the cool woods, or springs up by the side of some weather-beaten rock. The delicate mottling of its colours, together with its sprightly form and fine foliage, mark it indeed as one of the gems of the flowery kingdom. According to the soil and climate in which it grows, it has been noticed to vary greatly in height.

A. quinquefolia, wind-flower, or wood anemone, is the elfin-like, little thing which very early in the spring hovers about the trunks of old trees and is usually found within nodding distance of the spring beauty and the yellow adder's tongue. Most delicately its petal-like sepals are tinted with pink, or blue and so transcient is the bloom that the slightest gust of wind bears them away. Besides the basal leaves which arise from a thick, horizontal rootstock there are three others whorled on the stem just below the flower. They are five parted, with segments much cut and lobed. In England there still lurks the belief, transmitted, no doubt, from an old Roman idea, that to gather the first anemones of the year will serve as a preventative of disease. In fact, in European lore the anemone, which, however, is another species than this one, plays quite an important part.

"All wan and shivering in the leafless glade
The sad anemone reclined her head;
Grief on her cheek had paled the roseate hue
And her sweet eye-lids drooped with pearly dew."

These lines probably were written in commemoration of Venus' grief over the slain Adonis.

A. trifolia, mountain anemone, is very like the wind flower. The leaves of its involucre, however, are divided into three segments instead of five. It is moreover a taller, stouter plant with an air much less fragile. From North Carolina to southern Pennsylvania it occurs, usually in the mountains where its companion often is the sweet lily-of-the-valley.



PLATE LVI. CAROLINA ANEMONE. *Anemone Caroliniana*.
(178)

A. Virginiana, thimble-weed, or tall anemone, grows from two or three feet high and upholds on a long, stiff flower stalk a delicate, greenish white flower. Often the plant is branched at the place of the remote involucre, or stem leaves. Its curious fruit, a head of achenes, is in outline strongly suggestive of a lady's thimble. Through wooded paths and by mountain streams it looms up straight and high, and in the Alleghanies thrives at an elevation of considerable height.

HEART LIVER-LEAF. SHARP-LOBED LIVER-LEAF.

Hepatica acuta.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Crowfoot.	White or purplish.	Faintly fragrant.	Georgia northward.	December-May.

Flowers: solitary and terminating fuzzy scapes from four to nine inches high. *Involucre*: with three oval, hairy, sepal-like leaves which at their apices are pointed. *Calyx*: of six or more oblong, thin, petal-like sepals. *Petals*: none. *Stamens and pistils*: numerous. *Leaves*: from the base with long villous petioles; reniform, with three acute lobes; entire; often ciliate on the edges and slightly touched with purple.

Early, very early in the springtime when there is a note of barrenness in the woods, these pretty little wildlings send up profusely their fragrant bloom. They are next of kin to the wood anemone and like it have a quaint although hardly a fragile, personality. This species traverses the wooded slopes of the Alleghanies and is very similar to *Hepatica*, but it is not quite as beautiful. It can be distinguished by its pointed leaf-lobes. Among dead leaves and undergrowth of the preceding year it forms dense patches with its own rusty-looking leaves which have remained over the winter to act, perhaps, as a protection to the young, adventurous buds. Not until later are the new leaves sent forth. Although necessarily the hepaticas must lose some of their charm when taken away from their woodland setting, they are still excellent in cultivation, growing readily and showing at all seasons an attractive foliage.

H. Hepatica, liver-leaf, or noble liverwort is our best known species and the one which Mr. Hamilton Gibson regarded as our earliest spring bloomer. Its fragrant flowers are blue, pink, white or purple and the lobes of its leaves are rounded. Sometimes even under the snow its buds, well wrapped up in a dense fuzz, await the first gleam of sunshine to coax them into throwing open their petals. In the Tennessee mountains where the plant is abundant, its leaves are collected after the bloom has faded, they being of medicinal value.

RUE-ANEMONE.

Synedemon thalictroides.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Crowfoot.	White or pink.	Scentless.	Gulf region northward.	March-June.

Flowers: perfect; growing on slender pedicels in terminal umbels and having

at their bases an involucre which is composed of a number of foliaceous leaflets with long petiolules. *Sepals* : five to ten ; petal-like ; oblong, mostly rounded at their apices. *Petals* : none. *Stamens* : numerous, short. *Leaves* : with long petioles, from the base and on the stem ; ternately compound, the leaflets rounded or ovate and bluntly toothed towards the apex ; smooth ; thin. *Stem* : erect ; four to ten inches high ; smooth ; highly coloured at maturity. *Roots* : a cluster of small tubers.

Almost as perishable and very like those of the wind flower are this plant's blossoms, while its leaves resemble the foliage of the meadow rue. For these reasons is the Greek name, meaning bound together, significant. The genus is a monotypic one of eastern North America. Very early in the season, often about old trees and close to the wind flower, the stem shoots upward. Not until later do the basal leaves appear.

LEATHER-FLOWER. (Plate LVII.)

Clématis Viórna.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Crowfoot.	Reddish purple.	Scentless.	Tennessee, Georgia and West Virginia to Pennsylvania and westward.	May-July.

Flowers : solitary ; nodding. *Calyx* : campanulate with five, large, ovate sepals, thick and woolly inside and tapering into a recurved point ; leathery. *Corolla* : none. *Achenes* : broadly ovoid ; flat, with long feathery, pale yellow tails. *Leaves* : opposite ; mostly pinnate. *Leaflets* : entire, lobed or trifoliate pointed at their apices, glabrous. A vine climbing often ten or twelve feet high by means of the tendril bearing leaves.

Running vigorously up and down rail fences, meandering by the borders of streams, intermingling itself with shrubbery and even ascending small trees, this beautiful climber first weaves in and out its bell-like flowers, and then spreads to the breeze rounded balls of achenes with pale yellow and fleecy tails. Much of the beauty of the genus, indeed, lies in this clever device by which their tiny seeds may be borne, as kites with long well-balanced tails, to distances far from the parent plant, and thus every year increase their holdings of the soil.

C. crispa, marsh clematis, one of the most beautiful of the genus is a climber which also bears solitary and nodding flowers. They are fragrant, with a silvery sheen and look something as though they had been enameled with blue. About their margins the sepals are crisped like some tissue-paper, while inside they are lined with a dense, velvety tomentum. Until frost almost they continue to bloom. The leaves are pinnate and bear mostly trifoliate, lanceolate leaflets which are for the most part entire, although occasionally they become lobed. Although feathery, the long persistent styles are quite without the fleecy, curved appearance of those of the already mentioned species. In marshes and river swamps the plant grows best, and in the locality between Texas and North Carolina.

C. reticulata, another climber with solitary and nodding flowers belongs

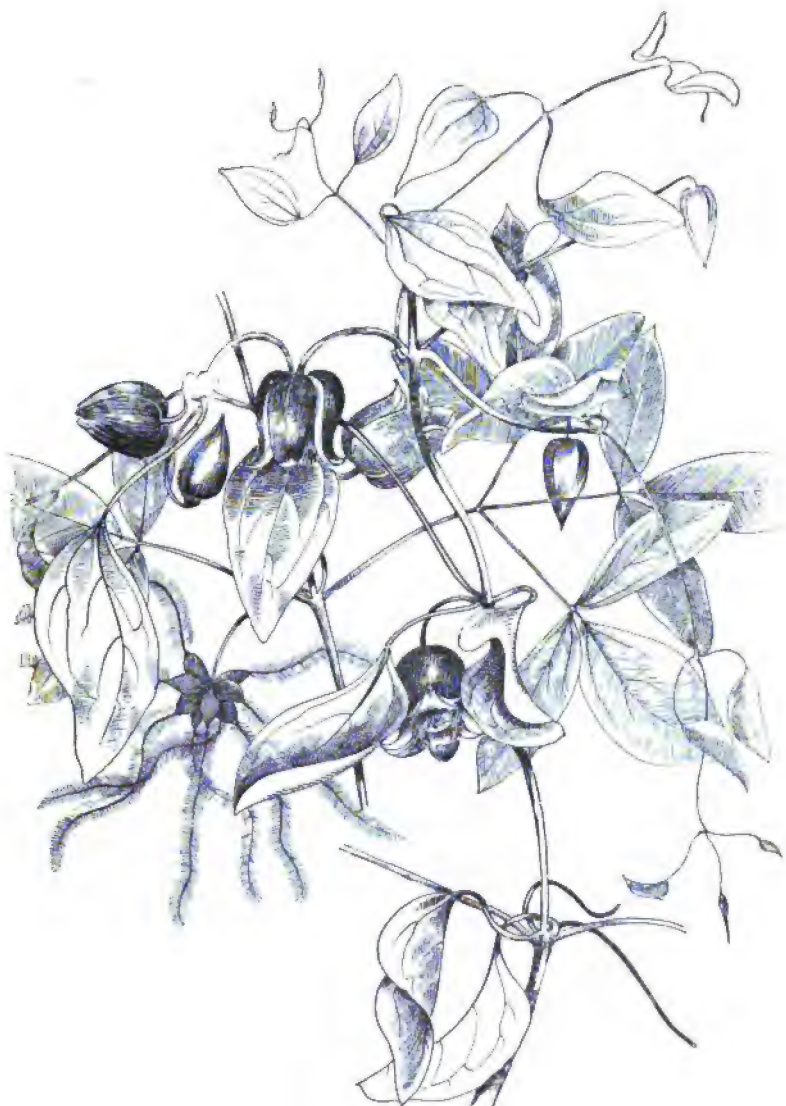


PLATE LVII. LEATHER-FLOWER. *Clematis Viorna*.
(181)

exclusively to the south. Its dull purplish sepals are lanceolate and quite woolly on their inner margins. The pinnate leaves bear oval, or ovate leaflets, entire and thick, although among them those are seen which are lobed. The very blonde tails of the achenes are of great length and extremely pretty.

ERECT CLEMATIS. SILKY CLEMATIS.

Clematis ochroleuca.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Crowfoot.</i>	<i>Yellowish green.</i>	<i>Scentless.</i>	<i>Georgia to Staten Island.</i>	<i>May, June.</i>

Flowers: terminal; solitary; nodding. *Calyx*: cylindric, the sepals with recurved tips and very silky on the outside; thick. *Achenes*: growing in erect heads, purplish, with long, brownish yellow tails. *Leaves*: large; simple; oval, or ovate, sessile or with very short densely pubescent petioles; entire; bright green and glabrous above; very silky underneath. *Stem*: erect; one to two feet high; reddish and covered with a silky fuzz.

This attractive plant which through its range is rather rare and local has been chosen for description as representing the group of clematises which grow in an upright, or ascending way; a habit which might often puzzle one not well acquainted with the diverse forms of the genus. When it rears, in fruiting time, its heads of achenes it is noticeable that their feathery tails are darker than those with which we are more familiar.

C. Addisonii, Addison Brown's clematis, a leafy, perennial herb bears terminal and axillary, nodding flowers with a purplish calyx. Its stem is erect or ascending, from one to three feet high, reddish brown and covered with a bloom. The lower leaves vary from ovate to lanceolate and clasp the stem with rounded bases. On their edges they are somewhat wavy. The upper leaves which are pinnately-divided terminate in a tendril. From Georgia to Virginia, in rich soil, especially along river banks, the plant prefers to grow.

C. ovata, mountain clematis, which occurs but locally through the Blue Ridge mountains and on Kate's Mountain, near the White Sulphur Springs, in West Virginia, bears small purple flowers which nod, are solitary, and coated with a thick silvery fuzz on their outer sides. The stems also when young, are very silky. It grows uprightly, and while sometimes branched is stiff and somewhat awkward in appearance. Apparently but little is known concerning the range of this rare plant.

VIRGINIA VIRGIN'S BOWER. TRAVELLER'S JOY.

Clematis Virginiana.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Crowfoot.</i>	<i>White.</i>	<i>Slightly fragrant.</i>	<i>Georgia northward and westward.</i>	<i>July, August.</i>

Flowers: numerous; imperfect; growing loosely in leafy panicles. *Calyx*: with

four oblong, petal-like sepals. *Corolla*: none. *Stamens and pistils*: very numerous. *Filaments*: glabrous. *Fruit*: a cluster of achenes with long, persistent feathery styles. *Leaves*: trifoliate, the leaflets broadly ovate and deeply toothed and lobed. A climbing vine.

Often it is that the commonest plants are far more beautiful than the rarities which we seek and favourably look upon simply because they are rare. From beginning to end the existence of the virgin's bower is replete with charm. Not only in remote haunts, but everywhere we see it running along rail fences, or covering low stone walls and shrubbery with masses of creamy tinted flowers, exhaling in great waves their faint fragrance, or tossing about the fantastic tails of its seeds. For centuries the people have known the vine. It has been loudly lauded and much written about. It is the generous, luxurious child of the family. In England, however, without discrimination, the various species are popularly called, virgin's bower.

What some writers regard as a form of this species and which is known as *C. Virginiana Catesbyana*, is distinguished by its pubescent leaves.

FALSE BUGBANE.

Trautvetteria Carolinensis.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Crowfoot.</i>	<i>White.</i>	<i>Scentless.</i>	<i>Florida to Pennsylvania.</i>	<i>June, July.</i>

Flowers: growing abundantly in loose, corymb-like panicles. *Sepals*: three to five, falling very early. *Petals*: none. *Stamens*: numerous; filaments slender. *Leaves*: large; palmately-lobed, they being deep and sharply dentate; thin, with a slight pubescence; those of base, long petioled; those of the upper stem sessile or subsessile. *Stem*: two to three feet high; stout; nearly smooth; branched.

It may be that this perennial herb is called false bugbane because at one time it was associated with the genus *Cimicifuga*, whose members have a reputed efficacy for expelling plant vermin, and are popularly known as bugbanes. The plant now represents, however, a monotypic genus which, as well as in America, occurs in Eastern Asia. In the mountainous parts of North Carolina it is found at altitudes of considerable height.

LOW SPEARWORT.

Ranunculus pusillus.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Crowfoot.</i>	<i>Yellow.</i>	<i>Scentless.</i>	<i>Texas and Florida to New York.</i>	<i>April-July.</i>

Flowers: very small; growing singly from the axils, or in loose terminal corymbs. *Sepals*: five. *Petals*: one to five, equalling the calyx in length. *Stamens*: few, one to ten. *Leaves*: simple; alternate; with long, smooth petioles which are sheath-like at their bases; long oval or ovate; entire; the upper leaves lanceolate and almost entire, short petioled or sessile. A branching annual, six to twelve inches high; leafy; smooth.



*Ranunculus
pusillus.*

This fragile, little plant belongs to the group of *Ranunculus* which we find growing in muddy banks and swamps. It is not very pretty, and when surrounded by high grasses becomes quite lost to view unless occasional glimpses are caught of its yellow flowers. Nearly all the members of this genus are neat looking plants and although others than botanists seldom pay much heed to their specific characteristics, they are rather well known through their kinship with the common buttercup.

R. obtusifolius, water plantain spearwort, which in an upright, or ascending way grows also in ditches, and muddy, wet places, is a more attractive plant than the low spearwort. Its small yellow flowers, very similar to those of the common buttercup are sometimes overshadowed by the lanceolate leaves, which along their edges are entire, or inclined to be remotely serrate. The petioles, as they clasp the hollow stem at the nodes, become sheath-like. This species is of perennial duration.

R. oblongifolius, oblong-leaved spearwort, a slender, and weak looking annual, occurs through very wet or marshy places. Its golden yellow flowers with numerous stamens are small, and its oblong, or ovate leaves, are usually shorter than their petioles, and entire or inclined to be dentate along the margins. The upper ones often are lanceolate.

R. sceleratus, celery-leaved crowfoot, comes before us as a leafy, glabrous plant, very different in appearance from any of the preceding ones by reason of its lobed or divided leaves. It also is an inhabitant of ditches and muddy banks. Its stem is very stout and hollow and contains a juice acrid enough to cause blisters. The large basal leaves at the ends of their long petioles are broadly cordate and palmately divided into from three to five lobes which are again toothed and cleft. The upper leaves are short-petioled or sessile and also divided. While the yellow flowers are very small they grow in great numbers; their petals being about as long as their sepals.

MOUNTAIN CROWFOOT.

Ranunculus Alleghaniensis.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Crowfoot.	Yellow.	Scentless.	Virginia and North Carolina to Massachusetts.	April, May.

Flowers : small; growing on long pedicels. *Calyx* : with five sepals. *Corolla* :

with five oblong, rather short petals. *Achenes*: growing in a globose or slightly oblong head and tipped with a recurved, hook-like remnant of the style. *Basal-leaves*: with long petioles; reniform; tapering at the base, crenate or somewhat lobed, not divided. *Stem-leaves*: long-petioled, or the upper ones sessile, divided into linear divisions, entire, or toothed and cleft at their apices. *Stem*: one to two feet high; branched; glabrous.

This crowfoot chooses to grow in higher and dryer ground than those already mentioned. Through its range it is therefore found in the mountains where, being similar to the next species with which it frequently grows, it is doubtless often overlooked by the flower seeker, as it differs but slightly from its protege except in the long, hook-like remnant of the style tipping the achene.

R. abortivus, kidney-leaved crowfoot, a nearly smooth plant, affects either a dry soil, or that of the moist woods. Sometimes it grows as high as two feet and is well branched. Its broadly cordate, or reniform basal leaves with their long, slender petioles are small and very pretty. Occasionally they are lobed, but more often crenate. The stem leaves are sessile and divided deeply into linear lobes, while noticeably shorter than the reflexed sepals are the blossom's yellow petals.

R. micranthus, rock crowfoot which grows in rich rocky ground, appears to be very closely related to the kidney-leaved crowfoot. Its basal leaves, however, are mostly ovate and the plant is densely covered with fine silky white hairs. Of the upper leaves the segments are narrow, in fact, almost linear.

HOOKEED CROWFOOT.

Ranunculus recurvatus.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Crowfoot.	Light yellow.	Scentless.	Florida and Missouri northward.	April-June.

Calyx: reflexed. *Corolla*: with five petals, somewhat shorter than or equalling the sepals. *Achenes*: forming a globose head, pointed and tipped with a slender, recurved hook. Basal and cauline leaves with long pubescent peduncles; reniform, pointed at the apex and deeply cordate at the base, the thrice, deeply cleft divisions lobed and toothed and somewhat hairy on the upper surfaces, below glabrous, or nearly so. *Stem*: eight inches to two feet high; erect; branching; hairy.

The hooked crowfoot is not a very pretty plant, but as it and those that follow belong to a group characterised by hispid or pubescent stems and lobed, or divided leaves, it may serve us as a type for study. Through the thickets of low grounds, or often in woods it rears its pale yellow heads.

R. hispidus, hispid buttercup, which extends well northward from Georgia, is more the conventional type of buttercup than those which have heretofore claimed our attention. It is one which children pull to see if their companions love butter, and blossoms in earliest spring. Its large

flowers have rounded petals and shorter, pointed sepals. The leaves are pinnately divided into from three to five broad segments, oblong or ovate and which also are sharply lobed, or cleft. Even when in fruit the plant is densely villous with yellowish, silky hairs.

R. Pennsylvanicus, bristly buttercup, does not begin to bloom until June when through open meadows or in wet places it throws out small flowers, the rounded petals of which are as long as, or a little shorter than, the pointed, reflexed sepals. It is an erect, somewhat slender plant with fresh, bright green leaves, thrice-divided, cleft and lobed so as to appear light and fern-like. On nearly all its parts it is covered with a thick, bristly pubescence.

MOUNTAIN MEADOW RUE.

Thalictrum clavatum.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Crowfoot.	White.	Scentless.	Tennessee to Virginia.	May, June.

Flowers: small; perfect; growing loosely in panicles. *Sepals*: five. *Petals*: none. *Filaments*: petal-like; spatulate. *Stigma*: minute. *Achenes*: flattened; spreading; sharply-pointed. *Leaves*: both basal and cauline; petioled and bi-ternately divided; leaflets three, rounded or obovate, long-stalked; unequally lobed at the summit; wedge-shaped at the base; entire; thin; smooth. *Stem*: six to twenty inches high, sparingly branched, glabrous.

Masses of feathery, fleecy, little flowers proclaim through damp woods the presence of the mountain meadow rue. But its most constant charm, perhaps, lies in its fern-like spray of graceful apple-green foliage tinted underneath as it is with misty blue.

THICK-LEAVED MEADOW RUE.

Thalictrum coriaceum.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Crowfoot.	White and purple.	Scentless.	Virginia and North Carolina to Kentucky.	June.

Flowers: small; diœcious; the staminate ones white with linear anthers, the pistillate ones, purple. *Achenes*: dull reddish; oblong-ovoid; sharply ribbed and projecting the slender style. *Leaves*: ternately decomposed; the petioles of the lower ones expanded at the base into wing-like appendages. *Leaflets*: three to five, with short petiolules; reniform, or broadly ovate; usually with three to five cut, or entire lobes at the apex. Bright green above; lighter below, thick; glabrous. *Stem*: three to five feet high; erect, branched above as in a panicle; glabrous. *Roots*: bright, lemon-yellow.

Often we notice about this meadow rue that the flowers of separate plants do not look alike. In one place will be a clump of those with white, rather showy blossoms and not far distant we see them of a purplish, misty tint. This is because the staminate and pistillate flowers are borne on different individuals,—in fact in two households. Then as they usually tower above

other surrounding growth the breeze catches up the dry, abundant pollen from the staminate ones and wafts it in the direction of their duller looking neighbours. For, like the great pines, these plants depend mostly on the wind as their fertilizing agent; not as yet have they learned the more thrifty and economical ways of insect carriers. In fruit the pistillate flowers are prettier than ever before, for their clusters of carpels are tinted with purple.

T. dioicum, early meadow rue, a slender, leafy species, throws out its panicle bloom in April, or early May. Its staminate flowers are rather attractive by reason of the protruding, yellow anthers with thread-like filaments. Less conspicuous than these are the pistillate flowers. The small leaflets are broadly cordate, or ovate and divided towards the apex into rounded lobes, entire, or toothed, thin in texture. In the late season they turn to dark shades of reddish and purple. The roots of this species are not yellow.

T. purpurascens, purple meadow rue, is found as the preceding plant in woods, or rocky thickets and can be distinguished by its great height and large leaflets which at maturity are often two inches broad. They also are then a vivid, deep green, paler on their undersides and somewhat waxy to the touch. At their apices they show usually three distinct lobes. Very abundantly the compound panicle bears its light fleecy bloom, of which the individual flowers are both perfect and imperfect. That the plant is designated as purplish meadow rue is because its stem is marked with that colour.

T. polygamum, tall meadow rue, while having a number of traits in common with the preceding species, grows to a height greater than that attained by any other one of the members of the genus in our range. By the side of a stream, or in an open swamp it towers above nearly all else, sometimes becoming twelve feet tall. Its stem is never waxy and the leaflets are smooth. Rather late in the season it develops its long compound panicle in which are both perfect and imperfect flowers. The filaments, on account of their thickness, readily serve to identify this one of the species characterised by polygamous flowers.



THE BARBERRY FAMILY.

Berberidaceæ.

Shrubs or herbs with simple, or compound leaves growing from the base or alternate on the stem, and which bear perfect flowers, either terminal and solitary, or produced in racemes. Fruit : a capsule, or berry.

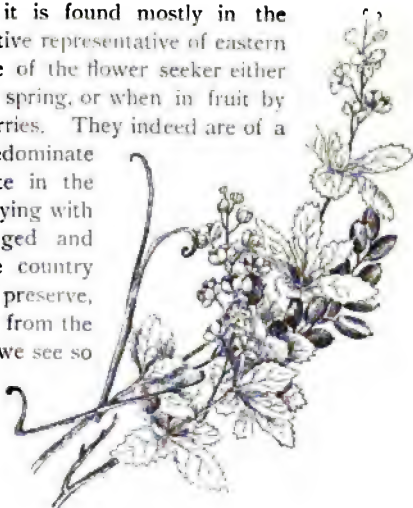
AMERICAN BARBERRY.

Berberis Canadensis.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Barberry.	Yellow.	Scentless.	Missouri to Virginia.	May. Fruit : August.

Flowers: small; growing in lateral and axillary racemes. *Sepals*: petal-like; short. *Petals*: rounded, notched at their apices and imbricated in two rows. *Stamens*: six; sensitive. *Pistil*: one. *Berries*: oval; scarlet; containing few seeds. *Leaves*: simple; growing thickly on the stems in alternate clusters; oval, or obovate; rounded at the apex and tapering into margined petioles at one base; finely serrate, tipped with a bristle; thick; glabrous. A spreading shrub with reddish-brown or grey branchlets.

Through the barberry's range it is found mostly in the Alleghanies, and being the only native representative of eastern America cannot but attract the eye of the flower seeker either by its lusty, fine appearance in the spring, or when in fruit by the wonderful brightness of its berries. They indeed are of a scarlet so lively looking as to predominate all surrounding growth. Until late in the season it holds its leaves, displaying with greater clearness the three pronged and sharp-pointed spines. Often the country people make the berries into a preserve, and prepare as well a yellow dye from the shrub's wood. The barberry that we see so abundantly in cultivation is usually the European species.

*Berberis Canadensis.*

BLUE COHOSH. PAPPOOSE ROOT.

Caulophyllum thalictroides.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Barberry.	Greenish yellow, or purple.	Scentless.	Missouri and South Carolina northward.	April, May.

Flowers: small; growing in a loose panicle at the summit of the stem. *Calyx*: with six sepals having three or four short bractlets underneath. *Corolla*: consisting of six petals which are gland-like bodies, hooded and with short claws; much smaller than the sepals, one at the base of each of them. *Stamens*: six. *Pistil*: one. *Ovary*: soon bursting after anthesis by the pressure of the two growing seeds and withering away. *Fruit*: naked, in pairs, each berry-like seed at the end of its thick seed-stalk, the exterior of the thin, fleshy integument turning blue at maturity. *Leaves*: one; ternately-compound and large and generally one or two

that are smaller near the base of the inflorescence. *Leaflets* : obovate or broadly cordate, twice or thrice lobed; whitish underneath; thin; smooth. *Stem* : one to three feet high; sheathed at the base; erect; smooth. *Rootstock* : thickened.

On many of the highest peaks of the Cumberland mountains and frequently in North Carolina ranging at altitudes between 4,000 and 5,000 feet above the sea level, this plant becomes in fruit more noticeable than at any other period of its existence, at lower planes. It is then extremely beautiful. All about, it is known by the native people whose belief it is, that it does good to all young creatures, the faith, no doubt, transmitted to them by the Indians who dosed with it their papposes. In the autumn, therefore, they gather its rhizomes and prepare a decoction, held in reserve throughout the year.

UMBRELLA-LEAF.

Diphylleia cymosa.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Barberry.	White.	Scentless.	Virginia and Georgia.	May, June.

Flowers : growing in a terminal, many-flowered cyme. *Calyx* : with six, early falling sepals. *Corolla* : with six, oblong flat petals. *Stamens* : six. *Berries* : blue; oblong; growing uprightly on their slender pedicels. *Leaves* : two with long petioles that are alternate on the stem and one very long petioled basal one which is peltate near the centre; large; rounded; deeply two-cleft with many sharply pointed, unequal lobes; dentate; thin, glabrous. *Stem* : erect; one foot to eighteen inches high; glabrous or nearly so.

One impression that this plant is prone to give is that it throws out too much leaf and too little flower. Again the papery foliage reminds us vaguely of the May apple, although we are saved from confusing the two as its flowers grow in a very different way, being clustered and rising higher than the leaves. Each year as the stem dies down to the rootstock it leaves on it a scar, a habit with which we are familiar in Solomon's seal, and which prevents any mystery concerning the plant's age. Through mountainous woods and along streams where the umbrella-leaf grows its appearance is much too bold and striking to be easily overlooked.

WILD MANDRAKE. MAY APPLE. WILD LEMON.

Podophyllum peltatum.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Barberry.	White.	Scentless.	Texas, Louisiana and Florida, northward.	April, May.

Flowers : large, solitary, nodding from a short stout peduncle between the forks of the leaves. *Calyx* : with six, early falling sepals. *Corolla* : with six or nine rounded, obovate petals. *Stamens* : usually twice the number of the petals. *Pistil* : one. *Fruit* : a large, fleshy berry, filled with seeds and appearing similar to a small lemon; sweet, edible. *Leaves* : the basal ones long petioled, peltate at the

centre; deeply five to seven lobed, the lobes two cleft and dentate; flowering stems arising from different rootstocks and usually bearing two similar leaves; slightly pubescent and ciliate, or occasionally glabrous. *Stem*: erect; smooth; sheathed with several membranous scales at the base. *Rootstock*: poisonous.

Perhaps no plant through its range is better known by the native people than the wild mandrake, or as they more generally call it, the hog apple. For hogs, the ubiquitous ones of the south know well enough how to shove their long snouts under the great leaves in search of its hidden treasure, the sweetish, yellow fruit. It is perhaps their struggle for existence which makes these creatures sagacious and happily they are not over discriminating about flavour. Through the mountainous districts they freely roam in search of their livelihood; their owners' responsibility concerning them often having ceased with the tying of a cow bell about their necks. From them no place is sacred. Other parts of the plant than its fruit, however, contain certain drastic, poisonous properties which they know well enough to leave alone, although these are utilized by chemists for whom the people collect the rhizomes in the autumn. Children have the pretty idea that the plant only unfurls its great umbrella-like leaves during April showers.



THE STRAWBERRY-SHRUB FAMILY.

Calycanthaceæ.

Spreading shrubs with simple, opposite, entire leaves having short petioles, and which bear large flowers, solitary at the ends of leafy branches. Sepals and petals imbricated in rows. Fruit large, enclosing many seeds.

SMOOTH STRAWBERRY-SHRUB. CAROLINA ALLSPICE.

Butneria fertilis.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Strawberry-shrub.	Maroon.	Faintly scented or scentless.	Georgia and Tennessee, to Pennsylvania.	May. Fruit: August.

Flower-bracts: green; linear; persistent. *Sepals and petals*: long; linear and imbricated in many rows. *Stamens*: numerous. *Pistils*: numerous, within the receptacle. *Fruit*: ovoid; tapering at the base and enclosing about twenty large, flattened seeds. *Leaves*: with short almost glabrous petioles; ovate or elliptical, tapering at the base into the margined petiole; thin; dark green; rough on the upper surface; glaucous underneath at least when young. A branching shrub, four to ten feet high with reddish bark marked with pale dots.

In western North Carolina, as I once saw from the roadside the large fruit of this shrub shadowed by other foliage, it recalled a wild fig just be-

ginning to ripen ; although naturally the outlines of its foliage forbade the pursuance of the illusion. When gathered and opened, the seeds were found to be quite numerous, while within each one the cotyledons, snugly curled, were clearly to be seen. This fruit it is said, is very poisonous to sheep.

B. Flórida, hairy strawberry-shrub, a native of the south, is the species so generally planted and which when well grown assumes rounded and beautiful proportions. Its branches and petioles are covered with pubescence while underneath the leaves also are softly downy. The greatest difference between the two shrubs, however, in the way of their affording pleasure, is that the flowers of this one, especially when they are crushed, emit a most delightful fragrance, suggestive of the spicy scent of wild woodsy strawberries.



THE LAUREL FAMILY.

Lauræacæ.

Mostly aromatic trees or shrubs with alternate, simple, minutely dotted leaves without stipules and small yellow or greenish usually fragrant flowers produced in clusters. Calyx segments imbricated in two series. Corolla : none. Fruit : a berry or drupe.

SPICE-BUSH. BENJAMIN BUSH. FEVER BUSH. WILD ALLSPICE.

Bénzoin Bénzoin.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Laurel.</i>	<i>Lemon-yellow.</i>	<i>Fragrant.</i>	<i>Tennessee and North Carolina northward and westward.</i>	<i>March, April.</i>

Flowers : diœcious, growing thickly along the branches and appearing before the leaves ; the clusters having at their bases an involucre of four deciduous scales. *Calyx* : with six early falling, rounded segments. Staminate flowers with their stamens arranged in series of three ; pistillate ones with a rounded ovary and rudiments of fifteen to eighteen stamens. *Drupe*s : bright red, oblong, fragrant when opened. *Leaves* : alternate, with slender, pubescent petioles ; oval, or elliptical, pointed at both ends, paler below than above ; deciduous. A spreading shrub three to twenty feet high with slender twigs, the bark of which is greyish and smooth.

Like a beam of sunshine radiating the bare tangled branches of winter do innumerable little lemon-yellow blossoms of the spice bush spread the moist woods in earliest spring and wave a proclamation of its incoming. Much

then is beginning to show colour, although in a subtle, mysterious way. Tips of the red maple have already tinted their grim bearers with crimson and a shower of white is upheld by the June berry. It is the time of expectancy; the time when few plants sleep. Later when the leaves of the spice bush unfold they are found, if crushed, to give out an odour which reminds us of its relative the sassafras, and likewise have in war times of this country been used as a substitute for tea. When the berries are ripe, after perhaps a flourishing brood of cat birds has been reared in the boughs, housewives wise in their generation gather them also to powder and use as a spice.

B. melissæfolium, hairy spice-bush while very similar to the more common species, has on its young buds, the twigs and underside of the leaves, a thick pubescence. It grows in wet soil and swamps from North Carolina southward and blooms as early as February.

RED BAY. ISABELLA-WOOD.

Pérsea Borbonia.

FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
<i>Laurel.</i>	<i>Oval, dense crown.</i>	<i>20-25 feet.</i>	<i>Texas and Florida to Virginia and northward.</i>	<i>May, Frail: September.</i>

Bark: reddish; young twigs greyish, puberulent or nearly glabrous. *Leaves:* alternate; oblong or oblong lanceolate, pointed at the apex and narrowed at the base; entire; lustrous; bright green; glabrous above at maturity, paler underneath; coriaceous; evergreen. *Flowers:* yellow; perfect; a few growing in panicles on long, axillary and closely pubescent peduncles. *Calyx:* six-parted, imbricated in the bud, the segments either equal or unequal. *Corolla:* none. *Stamens:* twelve, the outer ones anther-bearing. *Berries:* globose; dark blue.

The rose coloured wood of the red bay is very beautiful, as it takes a most brilliant polish and the best pieces of it have something of the shimmering look of watered satin. Long before mahogany became so generally used it was much sought for, and some exquisite pieces of furniture made from it are still to be found among the older inhabitants of the south. Its leaves have an aromatic fragrance much like sassafras. They could, it is thought, be made to yield a substance similar to that used in the bay rum of the West Indies.

P. pubescens, swamp bay grows near the coast from Mississippi and Florida to Virginia. It is a water-loving tree of at most, about thirty-five feet high and having its parts, as its specific name would imply, covered with a dense, brownish pubescence. In coming into bloom it is considerably later than the red bay and its wood is orange-brown.

SASSAFRAS. AGUE TREE.

Sassafras Sassafras.

FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
Laurel.	Crown; narrow, open.	15-50-125 feet.	Texas and Florida northward.	April, May. Fruit: Aug., Sept.

Bark : dark, reddish brown ; irregularly broken and furrowed. *Branchlets* : yellowish grey, when young, peeling readily ; aromatic ; mucilaginous. *Leaves* : alternate ; petioled, entire or two to five lobed ; ovate or obovate, when two-lobed usually mitten-shaped ; the apices of the leaves and lobes bluntly pointed or slightly rounded ; narrowed at the base. *Sinuses* : when the lobes are present, rounded. Dark green ; shiny becoming glabrous and often sprinkled with pellucid dots. *Flowers* : diœcious ; greenish yellow, growing in umbel-like clusters and appearing with the leaves. *Calyx* : pubescent ; six-lobed. *Stamens* : nine. *Fruit* : blue, growing on showy red pedicels ; oval ; one-seeded ; pungent.

In travelling through the mountainous districts of the south we saw quantities and quantities of the sassafras as it lined the sides of roads and occurred mostly in its shrubby form. But through denser thickets its brilliant red peduncles holding blue berries also shone brightly. The higher up we went the more of these berries were about, for it was then late in the season when few birds were there to feast on them. They had gone below, leaving in time a region where the winters are often so cold that Nellie Cottontail is found frozen stiff on the ground. Of the sassafras it has been written : " It is the last survivor of a race which at an earlier period of the earth's history was common to the two hemispheres. It is the only tree in a large and important family of plants which has been able to maintain itself in a region of severe winter cold. The structure of its flowers, like those of other plants of the laurel family, is curious and not easily explained with reference to special adaptations to special ends."

After the sassafras' discovery, it was for as long as two centuries regarded as a panacea for all ills and wide-spread was the belief in the virtue of its wood and bark. In 1602 an expedition was sent from England to Massachusetts with the sole object in view of procuring it, while in Virginia, the officials were instructed to send it home. Among other wonderful things it even had attributed to it the power of making salt water fit to drink. Emerson moreover says : " this tree has the credit of having aided in the discovery of America, as it is said to have been its strong fragrance, smelt by Columbus, which encouraged him to persevere, and enabled him to convince his mutinous crew that land was near." It was the French in Florida also who first learned from the Indians who called it " pavame " some of the other things for which it was employed. In Louisiana the Choctaw Indians still make from its leaves a yellow powder with which the Creoles give flavour to their gumbo filé. The twigs besides yield a mucilaginous substance useful to oculists and the aromatic oil obtained from its wood is

well known. While still its leaves are used to make a wholesome sort of tea, however, it must be acknowledged that most of its former glamour has departed and the sassafras is now simply recognised as containing "a mild aromatic stimulant."



THE POPPY FAMILY.

Papaverdceæ.

A group of herbs with coloured, or milky sap, simple or compound alternate leaves; and which bear perfect, regular or irregular flowers solitary, or in clustered inflorescences.

CLIMBING FUMITORY. ALLEGHANY VINE. MOUNTAIN FRINGE.

Adlumia fungosa.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Poppy.	Greenish purple.	Scentless.	Tennessee and North Carolina northward.	June-October.

Flowers: growing in drooping, axillary cymes. *Sepals:* two. *Petals:* four, united into a long cordate persistent corolla, four lobed at the apex; persistent. *Stamens:* six, monadelphous below, diadelphous above. *Capsule:* oblong, within the corolla. *Leaves:* bipinnately divided, the leaflets small; obovate and irregularly lobed, or entire, thin; smooth. A slender vine climbing by means of its tendril-like petioles.

We notice something very neat and dainty about both the flowers and foliage of this vine, as it is seen climbing boldly through moist thickets and woods. This, however, it does not begin to do until the second year of its growth when it is considerably changed in appearance from its more youthful days. And later when the capsules mature it is interesting to pull them out from within the withered corolla by projections at their bases and to find further that they are filled with tiny, shining black seeds. The genus is one that is monotypic.

WILD BLEEDING HEART. (Plate LVIII.)

Bicucilla extima.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Poppy.	Deep pink.	Scentless.	Tennessee to New York.	April-October.

Flowers: irregular; clustered loosely in compound racemes and nodding from slender pedicels, bracted at their bases. *Sepals:* two; appearing like scales. *Corolla:* cordate, the four petals in pairs, slightly united, the exterior pair with spurs at the base and diverging at the apex; the inner pair raised on long claws,



PLATE LVIII. WILD BLEEDING HEART. *Bicuculla eximia*.
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coherent above and winged along their backs. *Stamens*: six, in two sets and following the line of the outer petals. *Pistil*: one. *Capsules*: projecting a long bit of the slender style. *Leaves*: all basal with long, smooth petioles; ternately parted, the divisions having stalks and being pinnately divided into ovate or obovate segments which are again lobed, or toothed; thin; glabrous. An erect herb, one to two feet high.

Forming thick, fern-like clumps in cool places, for often the flowering scapes are shorter than the foliage, we saw under the high rocks which are so conspicuous in the superb gorge near Johnston City in Tennessee a great deal of this interesting plant. Here indeed was its true home, for in the southern Alleghanies it is a native. It was then late in September and while many of the quaint rose-coloured flowers still blossomed, on the same individuals were many capsules beginning to look well filled out and rounded. On every side of us, in fact, were masses of intense green, although here and there, as a forerunner of the autumn, flecks of brilliant red were tipping the tree tops. Combined with its unique personality that the plant is so constant a bloomer makes it an excellent one for the border in cultivation.

B. Canadensis, squirrel corn, bears whitish, often purple-tinted and nodding flowers which emit a faint fragrance something like that of hyacinths. Their spurs, which are short and rounded, form a deeply cordate base and the foliage, while bearing the marks of the genus, is noticeable from its silvery under-bloom. It arises from a cluster of small, yellow tubers looking like grains of corn, and these often the people collect.

B. Cucullaria, Dutchman's breeches, soldier's cap or white hearts, sends out its exquisite, elfish little flowers in earliest spring. They are white, tinted with pink and show a yellow summit. Because their spurs diverge very widely at the base they can be quickly told from the bloom of the two preceding species. The plant also is shorter than they, seldom being over ten inches high, and is the one most generally found.

PINK CORYDALIS.

Cupnoides sempervirens.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Poppy.	Rose-pink and yellow.	Scentless.	North Carolina northward.	April-September.

Flowers: growing loosely in racemes at the ends of axillary and terminal shoots. *Calyx*: with two small sepals. *Corolla*: irregular, deciduous, with four united petals, one of the outer pair forming at their base a rounded spur, the interior pair, narrow, keeled. *Stamens*: six, in two sets. *Pistil*: one. *Capsule*: erect; linear; projecting a bit of the style. *Leaves*: the basal and lower stem ones being long petioled; the upper ones nearly sessile; pinnately decomposed; the leaflets with mostly obovate segments, lobed or entire, thin; light green and glaucous underneath. An erect, much branched and glabrous herb.

High up in the mountains of North Carolina are found in many places long

sprays from which these dainty flowers nod enchantingly. Strongly suggestive they are of the fumitory group and their beauty is also enhanced by a spreading background of fine lace-like foliage. The punctured ones that occur among the blossoms are those in which ruthless humblebees have made for themselves a more convenient opening to reach the nectar than the mysterious one which nature has provided.

C. flavulum, pale corydalis, is rather a low and spreading plant. Its yellow flowers which grow in racemes are small and have short, rounded spurs. The capsules they bear droop, and the seeds are finely wrinkled. In rocky woods the finely dissected leaves call us closely to the plant where long it holds the attention through its delicate charm.

C. micranthum, small-flowered corydalis, is another one which grows in well shaded woods; those not further northward than North Carolina. Very like it is to the pale corydalis, but distinguished by its ascending pods and shiny smooth seeds. In its home in the far south it blooms as early as February.

BLOODROOT. RED INDIAN PAINT.

Sanguindria Canadensis.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Poppy	White, or pinkish.	Disagreeable.	Florida northward.	April, May.

Flowers: usually solitary, terminal at the end of a naked scape which is enveloped at the base by a membranous sheath. *Sepals*: two; falling early. *Petals*: eight to twelve; oblong or spatulate; arranged in two or three rows. *Stamens*: numerous. *Leaf*: one from the base, long petioled; reniform, or orbicular; broadly cordate and palmately five to nine lobed, they being cleft or crenate. *Rootstock*: horizontal and as the stalks containing a blood-red juice.

This white wilding with its centre of gold breathes out so freely a greeting to the early spring that it seems not to be especially petted by dame Nature, in spite of its fragility. Very bravely it shows a bold front to the weather. Neither has it been ruthlessly thrust on the world. Its protection is found in the way the young leaf is wrapped about the tender blossom which does not unfold and allow its stalk to stretch upward until after it has gained some confidence in its strength. And then almost as soon as it has fully blown, it perishes. One must be out with the early birds to catch a glimpse of it as the warm sun blows it open and before its sepals have been carried away by a lively wind. It lives, it would seem, only long enough to perish. To the Indians the plant was known as the "red puccoon." They used its highly coloured juice in war times to paint their faces and also to dye many materials for their baskets. In medicine it is still employed domestically as an expectorant. It grows in rich woods often on hillsides,—a most lovely wild flower. Those who carry it away find that it is easy to transplant and does well in cultivation.

THE MUSTARD FAMILY.

Cruciferae.

A large group of herbs with acrid, watery sap, alternate leaves and rather small white, or yellow flowers which grow in corymbs or racemes. Sepals: four usually early falling. Petals: four; cruciform. Stamens: usually six, two of which are shorter than the others. Fruit: a capsule.

WILD PEPPERGRASS.

Leptidium Virginicum.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Mustard.	White.	Scentless.	Texas and Florida northward.	May-November.

Flowers: tiny; growing in lateral and terminal racemes. Sepals: four, early falling. Petals: four, spreading in the form of a cross or occasionally wanting. Stamens: two only. Capsule: flat; round, notched at the top. Leaves: those about the base obovate or spatulate, unequally dentate; those on the stem, linear, or lanceolate; sessile or the lower stalked; irregularly toothed or entire. An erect and much branched herb; glabrous or slightly pubescent.

Frequently along the roadsides, or through fields we encounter this rather weedy-looking little plant, which, when well grown, however, is often quite pretty. Those that remember it is a mustard, perhaps pull a bit to eat the many round and lustrous pods which have a spicy taste.

SHEPHERD'S PURSE. MOTHER'S HEART.

Bursa Bursa-pastoris.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Mustard.	White.	Scentless.	General.	April-September.

Flowers: minute; inconspicuous; growing in long racemes, their thread-like pedicels becoming long in fruit and spreading at right angles from the stem. Calyx: pubescent, considerably shorter than the petals. Pods: triangular, wedge-shaped at the base and becoming broadly cordate at the apex; two-valved. Leaves: those tufted about the base, long, narrow, and pinnately divided into numerous irregular lobes which are dentate, or simply dentate and without lobes. Stem leaves: lanceolate; clasping and projecting two lobes at the base; entire, or irregularly dentate. Stem: five to eight inches high, branching; leafy; pubescent below.

So constantly does the shepherd's purse crop up along roadsides the world over that it counts among the passers-by a legion, at least, of friends. There are, however, few with sufficient sentiment, or charity so broad as not to regard it as a weed. In this country it has become naturalized from Europe where it is called St. James' weed. The popular names which appeal most to us in this country have naturally been bestowed in allusion

to the peculiar shape of its pods, they being infinitely better known than its numerous and minute flowers. In the early season when in bloom, for it is one of the spring's harbingers, the whole plant is collected by the people to be used in medicinal preparations.

WATER-CRESS.

Roripa Nasturtium.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Mustard	White.	Scentless.	Missouri and Virginia northward to Nova Scotia.	April-November.

Flowers : very small; growing in racemes; the sepals and petals persistent for a long time. *Pods* : linear; spreading their small seeds in two distinct rows. *Leaves* : pinnately divided into three to nine segments, of which the terminal one is almost orbicular and considerably larger than the others; glabrous, bright green; thin. An aquatic herb, usually floating, although also of a creeping habit and producing roots from the nodes.

About this little aquatic there is something very fresh looking especially when it is reflected in water from the banks of a brook, or grows thickly about the edges. Although it is common with us, it has been naturalized from Europe. It is also widely cultivated for use as a salad.

MOUNTAIN BITTER-CRESS.

Cardamine Clematilis.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Mustard.	White.	Scentless.	Alabama to Virginia.	April-July.

Flowers : growing in short racemes, their ascending pedicels short. *Petals* : two or three times longer than the sepals. *Pods* : slender; ascending. *Leaves* : both basal and cauline, long petioled and occurring simple and orbicular with cordate or rounded base, or divided into usually three broadly ovate or rounded leaflets, of which the terminal one is larger than the other two; either crenate, entire, or irregularly toothed. *Stem* : slender; ascending; purple tinted.

At about the same time that the spring beauty spreads its carpet of bloom through the wet woods, flecks of white are beginning to show on this one of the mustards. It thrives on the high mountains within its range, often growing close to some cool and shaded brook, and in the autumn is conspicuous for its leaves, which are very variable, and turn to exquisite shades of purple. The generic name of this group of mustards, meaning heart-strengthening, is in reference to the fact that some of the members were formerly employed as curatives for epilepsy and hysteria.

C. bulbosa, bulbous cress, is a pretty one which grows erectly from a bulbous root, and bears rather large, white flowers with elongated petals. The leaves are undivided and form the round or often heart-shaped ones at the base of the stem; they vary to those uppermost which are sessile and lanceolate, or linear.

C. rotundifolia, American water cress, spreading itself by means of stolons, is not an unusual find by cool springs through the Alleghanies. It is of ascending, or decumbent habit; its slender stem bearing small rounded leaves often cordate at the base and with an uneven margin, while its flowers are small and white.

C. Pennsylvanica, Pennsylvania bitter cress, makes with its irregular, fine spray of foliage a rather attractive showing, for in a distinctive way the leaves are pinnately divided into from four to eight pairs of obovate, or slender segments which are entire or toothed. Its flowers are less attractive. The plant sometimes astonishes one by growing as high as three feet.

TWO-LEAVED TOOTHWORT. CRINKLE-ROOT. PEPPER-ROOT. (Plate LIX.)

Dentaria diphylla.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Mustard.	White.	Scentless.	Kentucky and South Carolina northward.	April, May.

Flowers: quite large; growing on long, smooth pedicels in a loose raceme. *Sepals*: four; lanceolate; early falling. *Petals*: four; oblong, much larger than the sepals. *Stamens*: six, two being shorter than the others. *Pistil*: one; style slender. *Pods*: slender, about one inch long. *Leaves*: from the base and also two similar and opposite ones on the stem, they being divided into three stalked, unequal leaflets, oblong or lanceolate, and roughly toothed about the margins; the lateral ones appearing one-sided. *Stem*: simple; erect; glabrous. *Rootstock*: with long, tooth-like appendages, pungent to the taste; edible.

Showing its mustard blood by its many cross-shaped flowers and living luxuriously in rich leaf mold near such gay companions as the wind flower, the spring beauty and the yellow-adder's tongue, we find this one of the toothworts. Long ago country children found out that its crisp, spicy roots were edible. They therefore hunt them and enjoy the feast in much the same way as they do water-cress.

D. laciniata, cut-leaved toothwort, or pepper-root, is usually the first one of the genus to open its white, or pale pinkish purple flowers which along the banks of streams blow, in succession from April until June; the individual ones, however, lasting but a few days. The plant further varies from its already described relative in having instead of two, three fern-like leaves whorled on its stem, thrice divided and gashed-toothed into linear segments. The rootstock presents a little chain of tubers strung together and is edible.

D. heterophylla, slender toothwort, springs up from a jointed rootstock very near the ground's surface and bears usually but two stem leaves which



PLATE LIX. TWO-LEAVED TOOTHWORT. *Dentaria diphylla*,
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in cut and outline resemble those of *Dentaria laciniata*. Their divisions are very much narrower than are those of the large ovate basal leaves. Its range lies in the mountains of Georgia and Tennessee northward to Pennsylvania and New Jersey.

LYRE-LEAVED ROCK-CRESS.

Arabis lyrata.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Mustard.	White.	Scentless.	Missouri and Kentucky northward.	April-September.

Flowers: growing in racemes. *Sepals*: four; small; yellowish. *Petals*: considerably longer, squared or rounded at their apices. *Pods*: long; linear; ascending. *Leaves*: those of the base tufted and lyrate-pinnatifid; those of the stem narrowly spatulate, or linear; sessile; entire or dentate. *Stem*: erect; slender; leafy; pubescent below.

On rocky cliff, often by the side of *Draba ramosissima*, this little plant appears sometimes to be showered with its pure white and dainty blossoms. About its base the tufted leaves grow often so closely to the ground that unless other growth is pushed aside they rest unseen.

A. lævigata, smooth rock-cress, found in rocky mountainous woods from Georgia northward, is simple or but sparingly branched, wholly smooth and peculiar in having its very slender seed pods much recurved. About the flowers there is a slightly greenish tint. Its basal leaves are spatulate, sharply dentate, while those of the stem are lanceolate, or linear, partly clasping and project at their bases small, ear-like lobes.

BRANCHING WHITLOW-GRASS.

Draba ramosissima.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Mustard.	White.	Scentless.	North Carolina and Tennessee to Virginia and Kentucky.	April-June.

Flowers: small, growing on pedicels in lateral and terminal, erect panicles. *Calyx*: with four small, ovate sepals, not falling very early. *Corolla*: cruciform, with four clawed, entire petals. *Stamens*: six, two shorter than the others. *Pistil*: one; style, protruding, slender. *Pods*: oblong, twisted, projecting the style. *Leaves*: simple; sessile; oblong, ovate, or oblanceolate, pointed at the apex and rounded or tapering at the base; remotely dentate; rough and hairy on both sides. *Stem*: erect; six to eighteen inches high, branched below; very leafy; hairy.

There is something in the young dentate leaves which this plant sends up in early spring to well establish it in the memory. It is besides a dainty, pretty thing to find as through the mountainous parts of its range it ventures even to the edge, or perhaps peeps over, some high and rocky cliff.

D. brachycarpa, short-fruited whitlow grass, we find through dry fields and on hillsides. It is a rather insignificant annual and grows usually from two to five inches high. About its base the ovate leaves are tufted, while on the stem they are smaller and sessile. Sometimes the tiny flowers are without their yellow petals.

D. verna, vernal whitlow-grass, is the very common little member of this genus which has come to us from Europe and here inhabits waste and sandy places. Its leaves are all tufted about the base, and usually droop on the approach of rain. The ascending scapes are terminated by racemes of many tiny white flowers with two-cleft petals.

WAREA. (Plate LX.)

Warea amplexifolia.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Mustard.	Purple.	Scentless.	Florida.	September, October.

Flowers: growing loosely in corymb-like racemes. *Corolla*: cruciform, the petals oval, long clawed. *Stamens*: six, two of which are shorter than the others. *Pistil*: one. *Capsule*: slender, recurved, two-valved. *Leaves*: simple; slightly clasping; oval; entire. *Stem*: erect; one to two feet high.

The warea, as in our botanies this pretty plant is called, seems to bloom rather pretentiously for a mustard; indeed sometimes so delicate in tint and texture are its petals that they quite throw a slur of coarseness over those of its near relatives. But then its home is in the sand hills of the far south, Florida, where somehow all is tuned to a high pitch of loveliness.

BLADDER-POD.

Lesquerella Lescurii.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Mustard.	Yellow.	Scentless.	Tennessee.	April, May.

Flowers: growing in racemes which in fruit become elongated, their pedicels slender and pubescent. *Petals*: entire. *Pods*: inflated; round; two-valved; projecting the style and covered with minute hairs. *Leaves*: simple; growing thickly about the base and on the stems, the former spatulate, or obovate and tapering into petioles; the latter partly clasping, lanceolate or auriculate with two lobes at the base; irregularly dentate, rough and pubescent. An ascending, leafy and pubescent herb.

Very local indeed is this biennial, it being mostly found near Nashville, Tennessee, where in a rather lowly, although ascending way, it grows on the hillsides.

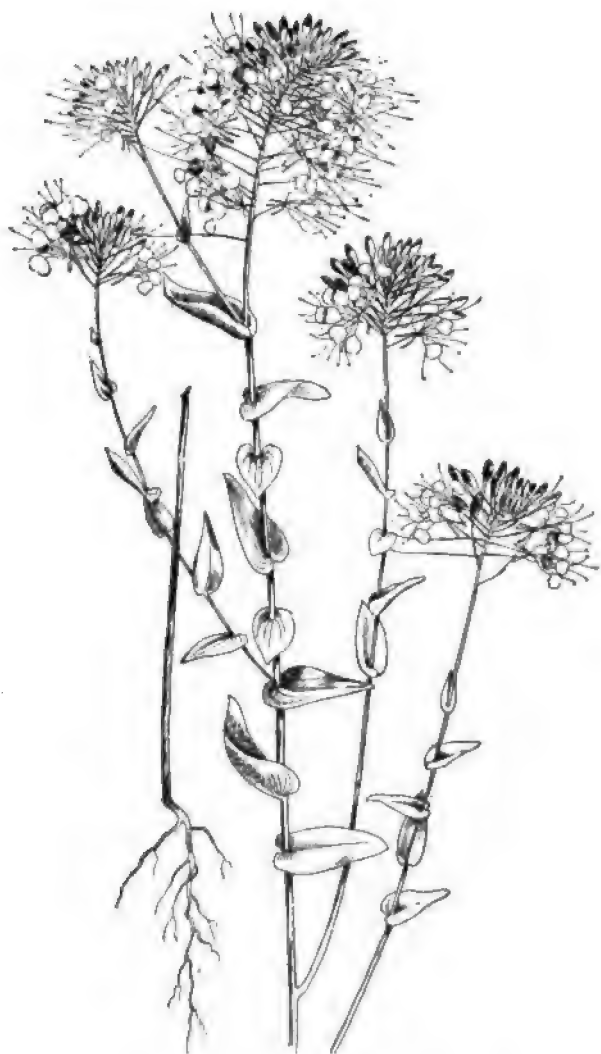


PLATE LX. WAREA. *Warea amplexifolia*.
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THE CAPER FAMILY.

Capparidaceæ.

Rarely trees, but shrubs, or herbs with watery sap and simple, or palmately compound leaves which are alternate, or less often opposite. Flowers : mostly perfect and borne in our species in loose racemose clusters, or in pairs, or few flowered clusters on short four-angled peduncles.

JAMAICA CAPER TREE.

Capparis Jamaicensis.

FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
<i>Caper.</i>	<i>Shrubby or with a straight, slender trunk.</i>	<i>5-20 feet.</i>	<i>Southern Florida.</i>	<i>April, May.</i>

Bark : dark reddish brown; irregularly broken. *Branchlets* : angular. *Leaves* : simple; oblong-lanceolate or elliptical, growing on petioles about a half of an inch long, rounded and notched at the apex and rounded at the base; entire; dark yellowish green, lustrous on the upper side, paler below and rough from the presence of tiny scales; the midrib conspicuous. *Flowers* : white, fading to tones of purple; fragrant; growing at the ends of the branches in a loose cyme. *Sepals* : recurved after anthesis or when flower is fully expanded. *Petals* : four; rounded; imbricated. *Stamens* : numerous, with very long filaments. *Pods* : from two to several inches long; brownish red when ripe and contain kidney-shaped seeds.

There are comparatively few trees, or shrubs of more interest than this beautiful flowered individual which makes its home on the coast and keys of southern Florida. And as every year this region is more visited than before by strangers it is becoming better known as a feature of our silva. The delicate white flowers in fading turn to purple and match somewhat their long, misty filaments. Very curious are the pods as they twist and retwist in drying and thus secure for the seeds a diverse distribution.

C. cynophallophora, caper-tree, is also an inhabitant of the Floridan keys and coast. While its leaves are very similar to those of the related species they are smooth, and the flower's sepals are much shorter than its petals.



PITCHER-PLANT FAMILY.

Sarracenidæ.

Insectivorous, marsh and bog herbs with basal, tubular, trumpet, or pitcher-shaped leaves and large showy flowers which nod from the end of scapes.

TRUMPETS. (Plate LXI.)

Sarracenia Drummondii.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Pitcher-plant.</i>	<i>Brilliant purple.</i>	<i>Scentless.</i>	<i>Florida to Georgia and westward.</i>	<i>April.</i>

Flowers: three to four inches wide; solitary; terminal and nodding from glabrous scapes two to two and a half feet high which arise from scaly rootstocks. *Sepals*: five, coloured and having bracts underneath. *Petals*: five. *Stamens*: numerous. *Pistil*: one; with dilated style which divides into five rays something like an umbrella, each ray being terminated by a hooked stigma. *Leaves*: twenty or thirty inches long; erect; trumpet-shaped with narrow wing and erect, rounded lid, covered with fine, white hairs; this lid and upper part of the leaf being white and variegated with purple veins.

Almost every one has heard about plants with curious, carnivorous appetites which by means of their special construction to this end, are able first to entrap small insects and then through certain cells, to absorb the products of their decomposition. Such are all the pitcher-plants, and of which our present species is most striking in its beauty. Its flowers are great radiant things, innocent-looking enough and especially interesting in formation from the umbrella-like shape of their styles. It is, however, the leaves that are wide awake to secure a livelihood. They are not content with the luxurious sunshine, the summer air and the rain; they must have animal food. Like trumpets they are tightly folded together; are closed at the bottom, while the part which extends above their top is suggestive of a little lid. Within they are lined with a sweet substance which acts as a lure to many small insects, and they once within the leaf's grasp reap the wages of their folly. It is difficult to get out again, indeed the sharp, down-pointed hairs make it impossible for such little crawling creatures to climb upward. They have but to succumb to their fate, vicarious suffering, that the strange, beautiful plant may have abundant life. Trumpets, as without discrimination the members of this genus are called in the south are among the characteristic flowers of the pine barren strip of country. In the swamps between Aiken, S. C., and Richmond County, N. C., this one is especially common.

S. rubra, red-flowered trumpet-leaf, has long and slim leaves, with narrow wings and erect, ovate lids which within are hairy, or tomentose. Often they measure eighteen inches high. Above they are pale in colour and much veined with dark purple. Usually the flowering scape rises above the leaves and bears a reddish purple flower. At the sepal's base there are three coloured bracts. From Florida to North Carolina the plant follows the pine barren swamps, or sometimes is found in mountain bogs.

S. Psittacina, parrot-beaked pitcher-plant, a most attractive individual found through pine barren swamps from Florida to Georgia, has compara-



PLATE LXI. TRUMPETS. *Sarracenia Drummondii*.

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tively small leaves which grow in a tuft about its base. They are gracefully shaped, having a broad wing, and are lined with white spots and marked with purple. The rounded lid, thought to resemble the head of a parrot, has an incurved beak which almost closes on the small opening of the tube and makes it, therefore, almost impossible for an insect to escape from its hold. From the midst of these leaves the flowering scape arises to a height of fourteen or fifteen inches and in April and May bears a reddish purple, nodding flower, deep and rich in colour.

S. flava, trumpets, trumpet-leaf or watches as the plant is respectively called, is the largest and a most splendid representative of the family. Its great lemon-yellow flowers with their oblanceolate, rather narrow petals, are often five inches in diameter, while the trumpet-shaped and conspicuously veined leaves grow even two or three feet long. Their wing is very narrow, and they do not broaden to as great an extent towards their summit as do some others. The slender pointed lid is yellow, touched with red and purple and softly downy within. In April and May the plant blooms, fairly illuminating many bogs and low barrens from Florida to North Carolina.

Along the Little River above De Sota Falls, near Valley Head in Alabama, and in swamps of the Sand mountain region there is growing a form of *Sarracenia flava*. Its trumpets, however, are more expanded at their summits, and they have a broader, more rounded lid. The flowers also are somewhat smaller than those of the regular species.

S. variolâris, spotted trumpet-leaf, is found from Florida to North Carolina, and especially about Summerville, near Charleston, it carpets in May the swamps with masses of lemon-yellow bloom. Its flowers are large, with long obovate, or oblanceolate petals and have a spreading style that is truly umbrella-shaped. The quaintly formed leaves are very long, erect and with a wing broad at the base but which tapers towards the summit until it is quite narrow. The ovate lid is concave, or curved in such a way as almost to close over the opening. That these leaves, besides being veined with purple, have on their yellow surfaces innumerable white spots has been the cause of the plant's common name.

S. purpurea, pitcher-plant, side saddle flower, or Indian tea-kettle, the latter a quaint and little known name, is a common species and the one on which the genus was founded. It is in fact very generally known as a curiosity over the country, its range extending from Florida to Canada. The leaves which grow in tufts about the base, taper into a reddish petiole. They are inflated towards the summit and rather suggest little pitchers, or ewers. Although glabrous on the outside, their inner side and the lid are covered with stiff white hairs which point downward. Of this species, the bloom, though small, is very handsome, occurring deep purple, crimson, or

often greenish, while the umbrella-shaped style is yellow. It and *Sarracenia flava* are the two most likely to be found two-thirds filled with water.



THE SUNDEW FAMILY.

Droseraceæ.

Insectivorous herbs, exuding a viscid substance from the glandular hairs which clothe the leaves, which are basal; or, in Dionæa, a glabrous herb with broadly winged petioles and bristle-fringed, sensitive leaf-blades; their flowers being produced on a high, smooth scape, in either racemes or umbel-like cymes.

VENUS'S FLY-TRAP. (Plate LXII.)

Dionæa muscipula.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Sundew.	White.	Scentless.	Wilmington, North Carolina and adjacent territory.	April-June.

Flowers: growing on a long, smooth scape in a flat-topped umbel-like cyme; their pedicels being bracted at their bases. *Calyx*: persistent; of five slender segments. *Corolla*: of five, obcordate petals. *Stamens*: ten to fifteen. *Pistil*: one; stigma, fringed and lobed. *Leaves*: from the base, with a long winged petiole, oblanceolate in outline and terminating in a broadly rounded, trap-like sensitive blade, fringed with stiff bristles and either green, or crimson on the upper surface.

To see the Venus's fly-trap catch its prey is a tragedy of the plant world, equal in value to the mythological story of the old man of the fountain who swallowed the children. It is only when the sun shines upon the leaves that they open widely their terminal traps and flaunt their brilliant linings to attract the insect's attention. The few inner bristles are very sensitive, and as the little creatures alight and brush against them, the trap quickly closes and holds the intruder fast. A secretion from its surface then prepares the insect for digestion, and not until the products are absorbed does the trap again open to entice another victim.

For a long time this plant has been regarded as a wonder and as such is treasured in greenhouses. It is now, however, becoming very scarce. About Wilmington, North Carolina, where once it was not unusual to meet with it frequently in one's rambles, one may now walk miles and still search assiduously the wood's swampy places without finding a trace of it. Only those that know some one of its retired haunts can find it readily, and from these it swiftly vanishes at the approach of civilisation.

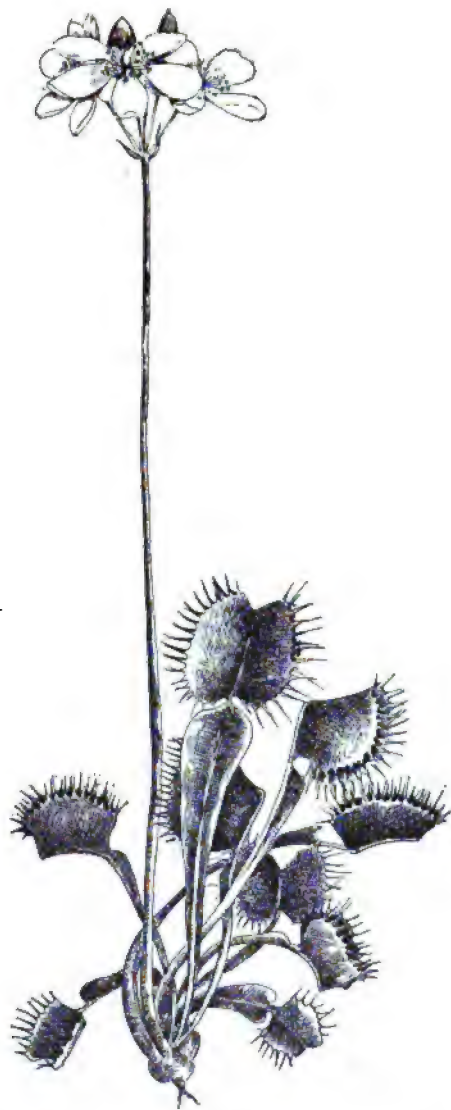


PLATE LXII. VENUS'S FLY-TRAP. *Dionæa muscipula*.
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THREAD-LEAVED SUNDEW.

Drosera filiformis.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Sundew.</i>	<i>Purple.</i>	<i>Scentless.</i>	<i>Florida to Massachusetts.</i>	<i>June-September.</i>

Flowers: large; numerous; growing in a one-sided raceme at the end of a high glabrous scape. *Calyx:* five-parted; persistent; pubescent with brown hairs. *Petals:* five; rounded; obovate. *Stamens:* five. *Pistil:* one. *Capsule:* three-valved. *Leaves:* from the base; narrowly linear; or thread-like; coiled in the bud and covered with glandular, brown hairs.

Perhaps the most striking in appearance of this genus of fly-catchers is the thread-leaved sundew, which unfolds a scorpion-like raceme of large and truly handsome blossoms. Its leaves uncoil as do fern fronds, and in the sunshine are seen to glimmer as with innumerable drops of dew. This effect, however, is produced by a fluid exuded in tiny drops from the glandular hairs with which they are thickly beset. It lures and entangles the insects in its sticky meshes until they disappear within the tight clutch of the innumerable bristles bending towards the poor unfortunate. In low sandy barrens this individual prefers to grow and as it stretches itself upward among surrounding tufts of grass has quite a different look from that of the bog species of sundews. A notable difference between the plants collected in Florida and those of Massachusetts is the greater luxury of the former's growth.

D. brevifolia, a miniature species of sundew, inhabits moist pine barrens from Florida to North Carolina. It seldom grows over six inches high and its wedge-shaped leaves are often but half an inch long. The flowers it bears are white.

D. rotundifolia, dew-plant or round-leaved sundew while being, perhaps, the most common species and the one made famous by Mr. Darwin, must always, it would seem, be searched for through our range as it rather evades the sight, the leaves growing closely in a cluster about the base and spreading out on the ground. Their blades are round and covered above with irregular, reddish hairs and taper at the base into flat, pubescent petioles. The glandular hairs exude a viscid substance, the peculiarity of the genus, and from which it received its common name. As the rather small flowers expand the scape unfolds. They are white and only open in the sunshine. A most interesting phenomenon which has been observed in connection with these plants is that sometimes after their season of bloom has passed new ones are found produced from buds which appear on the surfaces or edges of the old leaves.

"Queen of the marsh, imperial *Drosera* treads,
Rush-fringed banks and moss-embroider'd beds;
Redundant folds of glossy silk surround
Her slender waist, and trail upon the ground."



THE ORPINE FAMILY.

Crassulacæ.

Chiefly herbs, mostly succulent in habit, and with rarely solitary, but more often small symmetrical flowers which grow in cymes. Calyx lobes and petals equal in number. Stamens: of the same number, or twice as many as the petals.

WIDOW'S CROSS. (Plate LXIII.)

Sedum pulchellum.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Orpine.	White, pink or purple.	Scentless.	Texas to Virginia.	May, June.

Flowers: sessile and crowded in one-sided, terminal and recurved cymes, branched four to seven times. *Sepals*: four or five; shorter than the petals; rather blunt. *Petals*: four or five, linear-lanceolate; pointed. *Stamens*: eight or ten, inserted on the calyx; anthers, dark coloured. *Leaves*: alternate; sessile; crowded along the branches; linear, blunt at the apex and auriculate at the base; entire; glabrous. *Stem*: three to twelve inches long; erect, or decumbent; branched from the base.

As the generic name of these pretty little plants implies they have a way of sitting as they grow. Most often we see them perched high on rocks where the shallow soil collected in the niches is almost hidden from view. Here they perform a good service as soil makers. For gradually as their roots force their way through the fissures, the openings in the rocks become larger and more subject to damage through the violence of the weather and other extraneous causes. Finally they crumble into dust which is gladly received by mother Earth. In the south the orpines are cultivated for they are quite pretty and very useful in certain places as ground covers.

S. ternatum, wild stonecrop, is a clearly defined species from the way its sterile shoots arise from the base and spread their tufts of spatulate, smooth leaves which about their margins are narrowly transparent. The flowering branches also ascend and throw out spreading and recurved cymes. At the bases of the flowers there are leafy bracts while their linear-lanceolate petals are white. The wild stonecrop is not an uncommon plant and when found is usually sitting jauntily on moist banks, or the top of rocks.



PLATE LXIII. WIDOW'S CROSS. *Sedum pulchellum*.
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S. Nevii, Nevin's stonecrop, or houseleek, bears on the flowering stem small leaves that are all alternate, while those of the sterile shoots are imbricated and grow near the base in dense, rosette-like clusters. On the recurved branches of the three-forked cymes the little flowers occur very closely. Their linear, pointed petals are white. From Virginia to Alabama in the mountainous regions it makes its home and is known to the country people through the ability of its bruised leaves to cure nosebleed when laid on the crown of the head, or headache when applied to the temples. They also seek it to give relief when stung by hornets.

S. pusillum, a dainty little plant of annual duration growing on mountains in Georgia and Alabama, seldom becomes over four inches high. It has a glaucous, pale look and on its ascending branches the small white flowers grow abundantly. In fruit it is particularly pretty as the capsules and stems are then a pinky purple.

S. telephioides, live-for-ever, or American orpine, is a stronger, more hardy appearing plant than those of the family that have been mentioned, and is, in fact, almost indestructible through its ability to live mostly through its leaves. These are quite large, obovate or oval and sessile on the flowering stem. They are also remotely toothed. The branches of the cymes are close and compact while the little flowers they so abundantly bear are pinkish and lively looking. The plant which is intensely glaucous casts about a silvery, or purplish light. It continues to bloom as late in the season as September and from Georgia extends as far northward as Pennsylvania.

VIRGINIA STONECROP, DITCH STONECROP.

Penthorum sedoides.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Orpine.</i>	<i>Yellowish.</i>	<i>Scentless.</i>	<i>Texas and Florida to New Brunswick.</i>	<i>July-September.</i>

Flowers : growing closely together in forked, one sided cymes on short pedicels. *Calyx* : five-parted, the segments, ovate, pointed. *Petals* : five, (usually wanting). *Capsules* : five-lobed, partly united and tipped with the style. *Leaves* : large; alternate; oblong, or oblanceolate, pointed at the apex and tapering into short petioles at the base, or being sessile; finely serrate. *Stem* : erect; leafy; branched above; smooth.

In wet, swampy places, or ditches the Virginia stonecrop is commonly seen and is of especial interest to us as being the only known representative of its genus in this country. Differing also from others in the family its stems contain but very little juice. By some authors it is placed among the saxifrages.

THE SAXIFRAGA FAMILY.

Saxifragaceæ.

A group of trees, shrubs, herbs and vines with leaves growing either from the base, or alternate, or opposite on the stem and which bear perfect or imperfect flowers, solitary, or produced in panicles, or cymes.

MICHAUX'S SAXIFRAGE. (Plate LXIV.)

Saxifraga Michauxii.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Saxifrage.</i>	<i>White.</i>	<i>Scentless.</i>	<i>Georgia to Virginia.</i>	<i>May-September.</i>

Flowers: tiny; irregular; growing abundantly on hairy pedicels in compound panicles. *Calyx:* of five ovate, persistent sepals. *Corolla:* with five almost linear, clawed petals, unequal in size, the three larger ones being spotted at the base with yellow. *Stamens:* ten. *Pistil:* one. *Capsule:* two-valved containing many seeds. *Basal leaves:* growing in a cluster; spatulate, or obovate, rounded at their apices and their bases extending into margined petioles; dentate; very hairy on both sides and at maturity deep red on the lower surfaces. *Stem leaves, or bracts:* almost linear; sessile. *Stem:* six to twenty inches high; erect; branching; leafy above; viscid-pubescent.

From the summit of Satula mountain in western North Carolina one of these dainty plants was brought to me one day while at Highlands. It was about seven inches high, and flecked with many small, yellow-spotted flowers. From it Mrs. Rowan made the accompanying sketch. Later, however, when we went up the mountain we saw many larger ones which grew on sloping banks where often a small stream trickled over them as it came down the mountain side. Their leaves had then nearly all turned to a deep wine colour, and many were in fruit. Along Buzzard's Rock, an eerie place where comparatively few strangers find their way we also found these wildings thriving lustily amid rocks and streams. The genus with its many sprightly members has long been reported to be possessed of medicinal properties.

S. Grayana, Gray's saxifrage, as it arises from its corm-like rootstock, much resembles the preceding species of Michaux. Its basal leaves, however, are broader, being oval, or nearly orbicular, while in the same way they taper into margined petioles. Another marked difference between the two is that the petals of Gray's saxifrage are all alike instead of being irregular as those of the other. On the stems also, only bracts, not leaves are produced. In rocky places, especially through the mountains of Virginia and North Carolina it blooms through June and July.



PLATE LXIV. MICHAUX'S SAXIFRAGE. *Saxifraga Michauxii*.
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S. Virginicensis, early saxifrage, is the exquisite, bold little one which blossoms out in earliest spring; March often tossing it about with its blustering winds as it clings tightly to the crevices of rocks. Very densely its flowers grow in cymes at the ends of hairy scapes and show oblong-spatulate petals, nearly all alike which are not raised by claws. Besides appreciating the beauty of this saxifrage and the cheer it gives in the early season we know it also, although such a small individual, as one of our greatest soil producers.

ACONITE SAXIFRAGE.

Therophon aconitifolium.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Saxifrage.</i>	<i>White.</i>	<i>Scentless.</i>	<i>Georgia to Virginia.</i>	<i>June, July.</i>

Flowers: growing in terminal and lateral, cyme-like clusters, and having their pedicels covered with a viscid substance. *Calyx*: with five lanceolate, viscid lobes, the tube subglobose. *Petals*: five; oblanceolate; deciduous. *Stamens*: five; filaments short. *Leaves*: those from the base with long, slender pubescent petioles; the upper ones short-petioled, or sessile; orbicular reniform; slightly cordate or squared at the base and palmately five to seven lobed, they being serrate and sometimes viscid; almost glabrous above, hairy along the under veins. *Stem*: one to two feet high.

Very like a saxifrage is this attractive native of the Alleghanies where it grows in the woods or by small creeks. Its generic name, meaning beast-killing, is in reference to the substance of aconite which the plant contains.

FALSE GOAT'S BEARD.

Astilbe biternata.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Saxifrage.</i>	<i>Cream-white.</i>	<i>Scentless.</i>	<i>Tennessee to Virginia.</i>	<i>June.</i>

Flowers: polygamous; small; sessile; growing in panicles often a foot long. Staminate ones with linear, obovate petals, which in the perfect flowers are much smaller or often wanting. *Stamens*: ten; greatly exerted. *Leaves*: very large; twice or thrice compound, the leaflets with petiolules; ovate, obovate, or lanceolate; long pointed at the apex, and tapering, or cordate at the base, usually one-sided; sharply-serrate or cut; thin.

No goat's beard, it would seem was ever so pretty as the foamy, fleecy spray of this plant's bloom. From a long distance it can be seen lightening

the other abundant growth of rocky woods. Its leafage also is intensely green and has about it much of the charm which is associated with nearly all the saxifrages.

FOAM FLOWER. COOLWORT. FALSE MITRE-WORT.

Tiarella cordifolia.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Saxifrage.</i>	<i>White.</i>	<i>Scentless.</i>	<i>Georgia northward and westward.</i>	<i>April, May.</i>

Flowers : growing loosely in a raceme at the end of a naked, pubescent scape, their pedicels covered with glandular hairs. *Calyx-tube* : campanulate, five-lobed, the divisions white. *Petals* : five, oblong; raised on claws. *Stamens* : ten. *Styles* : two. *Capsule* : tiara-shaped; reflexed; two-valved. *Leaves* : from the base with long petioles; broadly ovate, deeply cordate and having from three to seven dentate lobes, pointed or blunt at their apices; their upper surface scattered with hairs while smooth or downy underneath. *Scape* : erect six to twelve inches high

With its masses of handsome flowers and usually attractive foliage the coolwort, as the mountaineers call the plant, is one of the most pleasing of early bloomers. During the summer it is kept busy by producing runners, a means through which it spreads itself abundantly.

TWO-LEAVED BISHOP'S CAP. MITRE-WORT.

Mitella diphylla.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Saxifrage.</i>	<i>White.</i>	<i>Scentless.</i>	<i>Missouri and Vir- ginia northward.</i>	<i>April-June.</i>

Flowers : small, growing in a terminal spike-like raceme on a hairy scape about which midway are wrapped two leaves. *Calyx* : campanulate, five-lobed. *Petals* : five; much cleft. *Stamens* : ten, slightly exserted. *Capsule* : flat, shaped like a little cap. *Leaves* : those from the base with long hairy petioles, broadly ovate, or orbicular; long pointed at the apex, cordate at the base, three to five lobed, serrate and incised; bright green and having scattered white hairs on the upper and lower surfaces. The two scape leaves similar, opposite and sessile or nearly so. *Scape* : erect; ten to eighteen inches high, pubescent.

While its foliage is not as handsome as that of *Tiarella cordifolia*, the Bishop's cap is still a very pleasing plant, and makes, moreover, an attempt at relieving the monotony of its long scape by the presence of two stem leaves. Its names are in allusion to the shape of the young pods, they being thought to be something like a Bishop's cap, or mitre.

RUGEL'S HEUCHERA.

Heuchera Rugelli.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Saxifrage.</i>	<i>White.</i>	<i>Scentless.</i>	<i>Alabama to North Carolina and Missouri.</i>	<i>July-September.</i>

Flowers: terminating the sometimes leafy stem in loose panicles, and having long, thread-like pedicels. *Calyx*: campanulate; persistent; pubescent. *Petals*: linear-spatulate, considerably longer than the calyx-lobes. *Stamens*: exserted. *Leaves*: from the base with long, villous petioles; broadly reniform, or orbicular, cordate at the base and having from seven to nine short, broad lobes with crenate teeth, each of which are tipped with a little point; thin; bright green above; lighter below and very pubescent along the veins and margins. *Stems*: eight to fifteen inches high; erect; very slender; viscid.

Projecting from a fissure along the side of a great rock near Highlands, North Carolina, I saw this plant clinging tightly to the scanty soil which had there found a lodgement. Its bloom was passing, but still there clung something of fleeciness about its thrust-out stamens and delicately tinted calyx. Its large and finely formed leaves also gleamed vividly green and presented an attractive appearance while quite different from the other saxifrages which have been mentioned. This one, as well as a number of members of the genus do remarkably well when planted in suitable situations and are desirable because they preserve their bloom until so late in the season.

H. villösa, hairy heuchera, (*Plate LXV.*) may be known from the foregoing species by its more acutely lobed leaves and because their under surfaces, their stems, and petioles are so densely villous with brownish hairs, almost like a small animal's shaggy coat. In rocky places it also is found and through country from Georgia and Tennessee to Virginia.

H. Americana, alum-root, raises a stout and high stem more nearly glabrous than those of the others which have been mentioned; while its flower's petals, hardly exceeding the lobes of the campanulate calyx, are greenish. Its leaves, however, are its prominent feature of beauty. They are rounded and have lobes which are crenate, or dentate. In the autumn they turn to pinkish purple and remain bright and variegated in colours throughout the winter. On their upper surfaces they are soft and velvety, for always there are traces to be seen of the scattered hairs which clothed them in early days.

KIDNEY-LEAVED GRASS-OF-PARNASSUS.

Parndssia asarifolia.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Saxifrage.</i>	<i>White, veined with green.</i>	<i>Scentless.</i>	<i>Georgia and North Carolina to Virginia.</i>	<i>July-October.</i>

Flowers: terminal; solitary; growing on scapes ten to twelve inches high and about which midway is a rounded, clasping leaf. *Calyx*: with five ovate, or oval,

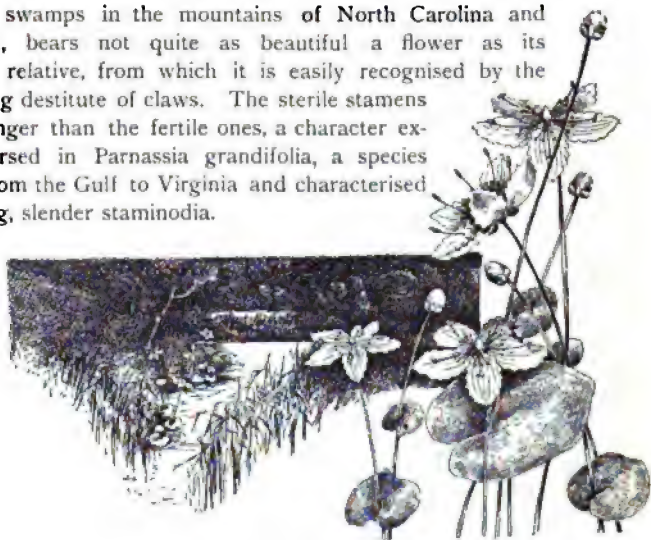


PLATE LXV. HAIRY HEUCHERA. *Heuchera villosa*.
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persistent lobes. *Corolla*: with five, elliptical, clawed petals. *Sterile stamens*: fifteen, grouped in threes; fertile ones, five. *Leaves*: from the base; with long petioles; reniform; entire; thin; palmately-veined; bright green above; lighter below; glabrous.

So elfin and delicate is the personality of this lovely flower that late in the season it carries us backward and we feel as though again intruding into the presence of some hesitating, early spring bloomer. Its chosen haunts are quiet, shady ones, by little brooklets or swamps and far from the dust and grime of the highways. Here it freely spreads its fair petals, delicately veined as they are with pale green, and quaintly undulated on the edges. It was Discorides who named the plant and while he may have associated it with the Greek mount, it could hardly have ever suggested to him a grass.

P. Caroliniàna, Carolina grass-of-Parnassus, found in wet meadows and bordering swamps in the mountains of North Carolina and northward, bears not quite as beautiful a flower as its described relative, from which it is easily recognised by the petals being destitute of claws. The sterile stamens are no longer than the fertile ones, a character exactly reversed in *Parnassia grandifolia*, a species ranging from the Gulf to Virginia and characterised by the long, slender staminodia.



Parnassia asarifolia.

SILVER LEAF. DOWNY OR SNOWY HYDRANGEA. NINE BARK.

Hydrangea radiata.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Saxifrage.</i>	<i>White.</i>	<i>Scentless.</i>	<i>Missouri to North Carolina.</i>	<i>June, July.</i>

Flowers : of two sorts growing in large, terminal compound cymes; the interior and fertile ones, small, numerous, with calyx tube four or five lobed. *Petals* : four or five. *Stamens* : eight or ten. The sterile or marginal flowers few and radiating in a border, their calyxes having three or four obovate, coloured lobes. *Leaves* : simple; opposite, with slender petioles; ovate, taper-pointed at the apex and rounded or cordate at the base; serrate; bright green and glabrous above, and covered underneath with a thick white tomentum. A shrub four to eight feet high, the twigs either smooth or pubescent.

In the mountains of the Blue Ridge and westward where this beautiful shrub is found, it grows sometimes closely in thickets, or again hangs from the hard packed soil of steep road-side banks. It was in seed when I saw it there, and the showy sterile flowers which earlier in the season had been raised as a signal to its insect ambassadors, hung dry and faded. But as the early autumn breeze waved upward its still beautiful leaves and thus showed their silver-grey linings as soft and sheeny as velvet, it produced a startling effect among the surrounding verdure; the little flecks of red just beginning to be seen, and the gleams of yellow from foxgloves. Almost exclusively the mountaineers call the plant, "nine bark." A name significant of the way its bark peels off in little layers. This they collect and steep for use in various medicinal ways.

H. quercifolia, an unusually showy and beautiful shrub, is a native along the rocky banks of streams from Florida and Georgia, westward. Its flowers are produced in a dense terminal thyrsus giving thus more the effect of the cultivated heads than does any other of the wild hydrangeas. In fact, for development under cultivation the species is a great favourite. The leaves are very handsome with from three to five well formed lobes and are covered underneath as is densely the young growth with a heavy tawny, or light coloured fuzz. Late in the autumn the sterile flowers turn to purple in drying and the foliage becomes a deep wine colour.

H. arborescens, wild hydrangea, is better known than the two mentioned species and extends further northward than any other one of the genus. As a spreading shrub of from five to ten feet high it grows along the banks of rocky streams, and throws out ovate, pointed leaves which are bright green and but slightly downy underneath. In general there are few showy, sterile flowers surrounding the inflorescence, although so variable at times is the shrub that they compose nearly the whole head.

DECUNARIA. (*Plate LXVI.*)*Decunària bàrbàra.*

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Saxifrage.</i>	<i>White.</i>	<i>Fragrant.</i>	<i>Louisiana and Florida to Virginia.</i>	<i>May, June.</i>

Flowers: growing in terminal, compound corymbs. *Calyx*: top-shaped; adherent to the ovary. *Petals*: seven to ten with slender lobes. *Stamens*: numerous. *Capsules*: top-shaped and projecting the styles with capitate stigmas; ribbed. *Leaves*: simple; opposite with slightly pubescent petioles; ovate or oval, pointed or blunt at the apex and rounded or pointed at the base; slightly one-sided; entire or shallowly repand-dentate; glabrous; shiny and slightly pubescent on the under veins. A woody vine.

On trees that inhabit low swamps this plant sometimes climbs to a considerable height, by means of the aerial rootlets which it insinuates into the bark and then ascends as fearlessly as men, with climbers or spurs, do telegraph poles. It is an altogether strange acting vine and monotypic of its genus in southeastern North America. Late in August when the capsules have burst the tissue between their ribs that the seeds may escape, they still cling to the stems and look very much like miniature squirrel's cages. The leaves then have turned from a vivid dark green to various shades of bright yellow.

VIRGINIA WILLOW.

Itea Virgínica.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Saxifrage.</i>	<i>White.</i>	<i>Scentless.</i>	<i>Louisiana and Florida to New Jersey.</i>	<i>May, June.</i>

Flowers: growing in terminal, dense racemes. *Calyx-tube*: campanulate, five-lobed; persistent. *Petals*: five, linear, slightly spreading. *Stamens*: five. *Capsule*: oblong, tipped with the twice parted style, pubescent. *Leaves*: simple; alternate; with rather short petioles, long oval, elliptical, or oblanceolate, pointed at the apex and narrowed at the base; sharply serrate; bright green and glabrous above, slightly hairy on the under sides along the veins; deciduous. A shrub, five to ten feet high.

A rather peculiar member of the saxifrage family is this one, but always a delightful find, and especially when drooping its long, slender clusters of fragrant flowers. From the resemblance of its leaves to those of a willow it was christened with its common and scientific names, although to many this likeness might not appeal as they are a good deal broader than the popular conception of willow leaves. In wet places, barrens and especially through the Dismal swamp they wave abundantly amid the wild vegetation.



PLATE LXVI. DECUNARIA. *Decunaria barbara*.
(223)



PLATE LXVII. ROUGH SYRINGA. *Philadelphus hirsutus*.
(224)

ROUGH SYRINGA. MOCK ORANGE. (Plate LXVII.)

Philadelphus hirsutus.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Saxifrage.</i>	<i>Cream-white.</i>	<i>Fragrant.</i>	<i>Alabama to North Carolina.</i>	<i>May.</i>

Flowers : large; one to three growing on short lateral branches. *Calyx* : top-shaped; persistent with four sharply-pointed, pubescent lobes. *Corolla* : with four rounded petals. *Filaments* : linear. *Leaves* : simple; opposite; with short pubescent petioles; ovate to lanceolate, pointed at the apex and pointed or rounded at the base; sharply serrate; dark green and hairy above; pale below and covered with rather stiff white hairs. A shrub with grey or reddish bark.

Beautiful indeed are the creamy white blossoms of this shrub which resemble so much those of the orange tree and have a fragrance equally sweet. The people know it well for it is common, and that their senses are not dulled to its loveliness is proved by the numbers seen planted about their cabins. Seldom two plants more dissimilar in general appearance could be chosen from the same order than this one and the little saxifrage Michauxii with which we began our acquaintance with the family. They are, however, first cousins at least, showing in their innermost parts the same blood.

P. grandiflorus, large-flowered syringa, unfolds large, rounded petals and makes an unusually fine showing as it occurs in low country from Florida to Virginia. One to three of the blossoms grow from the axils, or ends of the branches and their rare charm is only lessened by their lack of fragrance.



THE GOOSEBERRY FAMILY.

Grossulariaceæ.

Including a solitary genus of spreading shrubs with simple, alternate, petioled leaves which are mostly lobed; and bearing flowers with bracted pedicels growing in axillary racemes or being subsolitary.

DROOPING GOOSEBERRY. (Plate LXVIII.)

Ribes curvatum.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Gooseberry.</i>	<i>White.</i>	<i>Faintly fragrant.</i>	<i>Georgia.</i>	<i>April, May.</i>

Flowers : small, growing on bracted, twisted pedicels from the sides of the branches. *Calyx* : adnate to the ovary, with five white, spreading lobes. *Corolla* : included in the calyx, the five petals, small, scale-like. *Stamens* : five; exserted;



PLATE LXVIII. DROOPING GOOSEBERRY. *Ribes curvatum*.
(226)

filaments, hairy. *Pistil*: one. *Berry*: large; globose, containing many seeds and showing at its summit the persistent calyx and remnants of the stamens. *Leaves*: with long, pubescent petioles and growing in clusters along the rounded branches; palmately five-lobed; toothed; bright green and lustrous at maturity. A low branching shrub with slender, recurved spines about one-quarter of an inch long; glabrous.

Not until 1895 was this gooseberry described by Dr. Small, and it therefore is comparatively a new species. In rocky woods it thrives best, two of its known haunts being the slopes of Stone Mountain, in Georgia, and Sand Mountain in Alabama. With its highly coloured twigs, and bark which exfoliates in papery, thin sheets it is perhaps more attractive in the autumn than at any other season of the year.

R. rotundifolium, eastern wild gooseberry, is indigenous along the mountains from North Carolina to Western Massachusetts. Its sepals are not coloured white as are those of the drooping gooseberry, but are greenish and tinged with purple, while the lobes of its corolla are possibly less scale-like and more showy. The broadly orbicular leaves are lobed and toothed and when mature, smooth and glossy. The berries are small. It is not a very thorny plant, frequently none at all being seen, or else but a few which are short and straight.

R. cynosbati, wild gooseberry or dogberry, can be easily distinguished from all others by its prickly fruit. It is, in fact, the one that children know and abundantly gather in woods of the mountainous districts. Often protruding from fissures of the great rocks on Grandfather Mountain we saw, one September, its shapely palmately lobed and toothed leaves and very prickly stem. They had then turned to an intense wine colour.

R. prostratum, fetid currant, bears light red fruit, which is glandular bristly. It may further be known by its racemes of numerous flowers and the very disagreeable odour it exhales. To those that have climbed the mountain summits it is undoubtedly familiar and through our range is only to be found in such places.



THE WITCH-HAZEL FAMILY.

Hamamelidaceæ.

A group of trees and shrubs with simple, alternate petioled leaves, and flowers which grow in different forms of clusters, being perfect, or imperfect. Perianth, sometimes wanting. Fruit: a woody capsule.

WITCH-HAZEL.

Hamamelis Virginiana.

FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
<i>Witch-hazel.</i>	<i>Broad; spreading.</i>	<i>8-30 feet.</i>	<i>Texas, Florida, New Brunswick and westward.</i>	<i>September-December. Fruit: November.</i>

Bark : brown ; smooth, exfoliating in thin scales. *Inner bark* : purplish red. *Stipules* : lanceolate. *Leaves* : with short stout petioles ; obovate ; pointed or rounded at the apex, unequal at the base ; repand dentate ; frequently entire below the middle. Dull green above, lighter coloured and pubescent underneath ; slightly astringent. *Flowers* : bright yellow ; growing in axillary clusters on short peduncles. *Calyx* : four parted, with bractlets underneath ; inner surface orange-brown, pubescent. *Corolla* : yellow, of four almost linear petals, often twisted and falling with the stamens. *Fruit* : a woody capsule, with black or dark brown shining seeds.

Black shadows are gathering about the tree stumps ; their boughs are forming an upper sea of leaden colour ; little ground animals are carrying nuts to their holes ; the weather is pulling itself together for the strong blasts of winter when the witch-hazel bush opens wide its buds and sends forth masses of pale yellow bloom as timid and tender looking as that of the spice bush in earliest spring. Hardly another flower can then be found although over the fences quantities of the bitter-sweet's orange and scarlet fruit is clustered and a belated dandelion, perhaps, blooms in the fields. The fallen oak-leaves also have still their crisp rustle. This is as well the season when the witch-hazel does its best shooting, and outstrips, in skill, all others of the plant kingdom. From the fruit the bony seeds are shot forth as the capsule's elastic tissues burst and contract. It is an amusing process to watch, provided, of course, one is well out of the bombardment line. That the ripe fruit and the flowers appear simultaneously on the tree is because those blossoms which came into blow late the previous season are very slow in the development of their seeds and which only reach maturity as the next year's blossoms are coming forth. On the slopes of the Alleghenies the witch-hazel is particularly beautiful, being there arborescent and of abundant proportions.

There is in Europe no indigenous *Hamamelis* ; the two other members of the genus are natives of Japan. The hazel there known, however, is a relative of the elm and has clustered about it many superstitions and much folk-lore. No doubt the early settlers of this country, seeing some resemblance between the leaves of the two plants, christened our shrub and transmitted to it much of the other's reputation. Still there are those living whose faith is unbounded in the power of its twigs to locate underground the presence of water, or precious metal. One has but to meet with the credulous soul from the back woods to hear strange tales of wonder brought about through its mysterious potency.

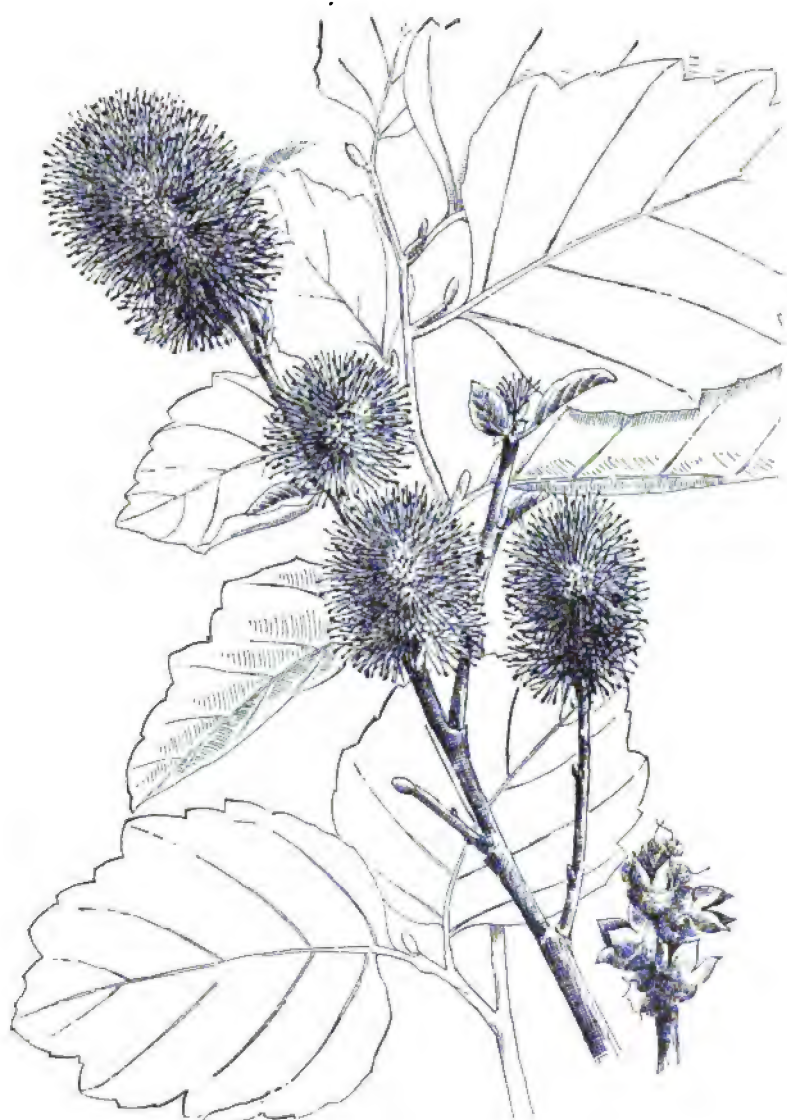


PLATE LXIX. FOTHERGILLA. *Fothergilla major*.
(229)

FOTHERGILLA. (Plate LXIX.)*Fothergilla major.*

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Witch-hazel.</i>	<i>Cream-white.</i>	<i>Fragrant.</i>	<i>Georgia to Virginia.</i>	<i>April.</i>

Flowers: growing in large, dense, catkin-like spikes and appearing before or as the leaves unfold. *Bracts*: often three-lobed; pubescent. *Calyx*: campanulate, with from five to seven obscure lobes. *Petals*: none. *Stamens*: very numerous; much exserted. *Capsule*: two lobed; pubescent; the lobes pointed with the slender styles; one seed in each valve. *Leaves*: with short, pubescent petioles; broadly oval, blunt or short-pointed at the apex and narrowed or rounded at the base; usually one-sided; irregularly dentate or crenate, becoming entire towards the base; thick; pubescent at least when young. A shrub two to five feet high.

As a fluffy mass of long white stamens does the bloom of this attractive shrub present itself; and very early in the season it enlivens the mountain slopes, or glimmers from well kept grounds where it is cultivated. In the autumn the foliage turns to brilliant gold. The fruit, not unlike that of the witch-hazel, has also the trait of bursting open and ejecting its bony seeds to a great distance.

F. Carolina, not nearly as large or showy a plant as the one just described, bears its flowers in small dense spikes, seldom more than an inch long. They open when the leaves are very young. These latter have ovate and pubescent stipules which fall quite early. In moist soil and thickets it thrives best and as far southward as Florida.

**SWEET GUM. STAR-LEAVED GUM. BILSTED.
ALLIGATOR TREE. (Plate LXX.)**

Liquidambar styraciflua.

FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
<i>Witch-hazel.</i>	<i>Rounded.</i>	<i>60-140 feet.</i>	<i>Florida and Missouri northward.</i>	<i>April, May.</i>

Bark: reddish brown; very rough. *Branchlets*: usually covered with corky ridges. *Stipules*: lanceolate; entire. *Leaves*: with slender petioles; rounded in outline; cordate at the base; palmately-lobed, the lobes from five to seven usually five; finely serrate; brilliant, smooth and lustrous above; ribs tufted in the angles below. *Odour*: pleasant, when bruised. *Flowers*: monœcious; the staminate ones growing in a dense terminal raceme; the pistillate ones growing in an axillary, peduncled head. *Fruit*: a hanging globose ball of woody pointed pods which open and release the few good seeds contained within each one.

There are few indeed of our native trees which can rival in beauty and symmetry of outline the sweet gum. As it occurs through the forests its character is quite distinct from all others, only resembling somewhat in its rounded crown, the sugar maple. Through the Alleghany ridges it is not

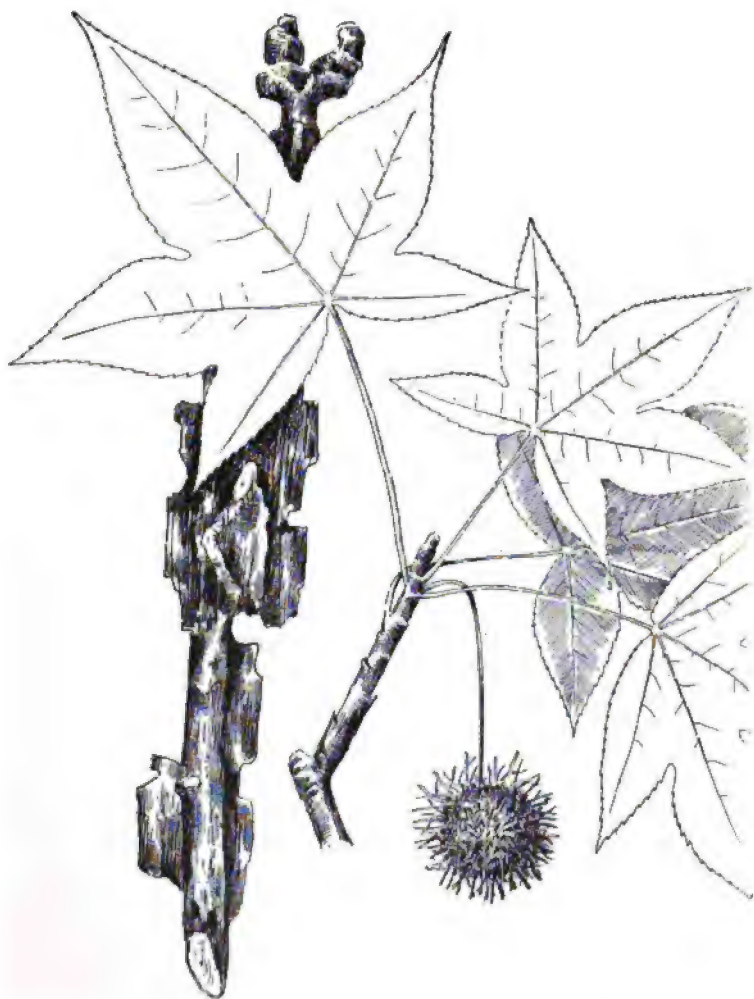


PLATE LXX. SWEET GUM. *Liquidambar styraciflua*.
(231)

so frequently seen as in the Mississippi basin, where it attains to a great size. Usually it borders streams and swamps, or grows in springy, low places through woods. About the star-shaped foliage there is in summer a deep, lustrous and wholesome look, while in the autumn it becomes brilliant and gay. On some of the trees the leaves turn on their upper surfaces to deep purple, remaining green underneath, but more often the whole foliage becomes a deep vinous red. And year after year it is interesting to watch how constant the individual trees are to the colour they have chosen. Through the winter the corky wings which are produced on the young branches make the tree a conspicuous individual.

It was Linnæus who named the Liquidambar and this he did from the liquid exudation of its bark which is of amber colour. As this juice hardens it forms a fragrant gum often called copal. This herbalists collect, it being useful as a substitute for storax in external applications, or in the treatment of catarrh. The leaves too when bruised have a pleasant, resinous fragrance and are rich in tannin.



THE PLANE-TREE FAMILY.

Platanaceæ.

BUTTON-WOOD. PLANE-TREE. BUTTON-BALL TREE.

Plátanus occidentális.

FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
Plane-tree.	Spreading; broad.	60-130 feet.	Texas and Florida to Maine.	April, May.

Outer bark : dark brown; thin, peeling freely and showing the polished, white inner bark. *Buds* : concealed throughout the summer under the hollow base of the leaf petioles. *Leaves* : with downy petioles; orbicular with taper-pointed apex and squared or cordate base. The edges coarsely toothed or often three to five lobed; the sinuses between them rounded; densely pubescent, becoming glabrate in age. *Flowers* : small, in round heads; monœcious. *Fruit* : growing closely in solitary round balls which hang from the ends of long, wiry peduncles. They become dry and remain on the trees through the winter, or until their seeds are scattered by the wind.

In moist woods or bordering streams where the cover is formed of millions and millions of hanging leaves, some fantastic in outline, others heart-shaped, or rounded, or again oval or shield-shaped, and some are crumpled and others smooth and lustrous; there broadly spread, are also the ruggedly formed ones of the button-wood, and partly hidden by their waving masses are, perhaps, its quaint balls of fruit. As the celebrated Planes

of the old country, the tree is one of the largest of the temperate zone, it growing in fact, to a great size and recognised to be the largest tree of east America. By it the characteristics of its family are well illustrated, for there is but one genus and of the seven species recognised the button-wood is the only one represented in the southeastern states. Over the United States it is a familiar sight as near the borders of streams, or by small springs and brooks it raises its large branches, often silvery white through the peculiarity of the outer bark in peeling and showing the polished inner one. Near the bases of the trees, however, it does not so freely exfoliate. Perhaps the greater number of people know this tree as the "sycamore," a name erroneously applied, and which when properly used belongs to trees not indigenous to America.



THE ROSE FAMILY.

Rosaceæ.

Represented in our range by trees, shrubs or herbs with simple, or compound, alternate leaves and which bear regular, perfect or rarely dioecious flowers; their petals being mostly rounded, and equal in number to the lobes of the calyx, or altogether wanting.

NINEBARK.

Opulaster opulifolius.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Rose.	White or purplish.	Scentless.	Georgia to Quebec and westward.	June, July.

Flowers: rather small; growing on pubescent pedicels in rounded, many flowered terminal corymbs. *Calyx*: campanulate; persistent; with five reflexed, glabrous or slightly pubescent lobes. *Petals*: five; rounded. *Stamens*: numerous; exserted. *Pods*: inflated, three to five, sharply tipped. *Leaves*: simple; with slender petioles, broadly ovate or orbicular, and palmately three to five lobed, unevenly serrate; bright green; smooth. A branching shrub, two to ten feet high, with glabrous twigs.

Of the rose family there are many children, some wildly gay and beautiful, others of botanical interest only, and again others that are queer, very queer. The ninebark, however, is one of the large, rather gawky ones. Its bloom is not very pretty, but it redeems itself from the commonplace, as, in fact, do many plants, by the beauty of the ripening pods. They, hanging in quantities at the ends of its long, curving branches, produce something the same effect as the fruit of a species of *opulus* or cranberry-

tree, an incident suggested perhaps by the shrub's generic name. The common name which would naturally recall one of the hydrangeas, is in reference to a trick of the bark in peeling not nine but many times into dilapidated looking stripes. Along river banks or in rocky places the shrub selects its natural home. It also does well and is desirable in cultivation.

VIRGINIA SPIRÆA.

Spiræa Virginidna.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Rose.	White.	Scentless.	West Virginia to North Carolina.	June.

Flowers: perfect; growing on pedicels in terminal, compound corymbs. *Calyx*: five-lobed; persistent. *Petals*: five, short-clawed and inserted on the calyx. *Stamens*: numerous. *Leaves*: simple, with slender petioles and often two small early-falling stipules at their bases; long oblong, or oblanceolate, bluntly pointed at the apex and tapering, or wedge-shaped at the base; almost entire; thin; bright green above, paler and glaucous underneath. A shrub with branches one to four feet long; glabrous.

What we expect from the spiræas in the flowering season is masses of dainty, light blossoms packed snugly together. This one of the group is shade loving and grows closely to damp rocks to there produce its bloom at the end of long, wand-like branches. Perhaps we are a little disappointed with it, and think it rather poor-looking in comparison with some of its more common relatives. There is satisfaction, however, in knowing it to be a rare plant.

S. tomentósa, steeple-bush, or hardhack, is a most familiar sight as through moist meadows and near swamp borders it raises in the late summer its compact, steeple-shaped panicle of peach-blow pink. And very fleecy and small are its numerous flowers which produce this unusual opaque-looking colour. The plant stands erectly and would in any case be distinguishable among the spiræas by the dense, woolly tomentum which covers the underside of the leaves, its stem and short pedicels.

S. salicifolia, meadow-sweet with its small white or pinkish-white bloom, is a charming individual and possibly the most widely distributed of the spiræas. Concerning the forms passing under this name there is now, on the part of some botanists, a desire to interpret the true *Spiræa salicifolia* as a native of Asia and Europe, and to regard the American plants under the names *Spiræa alba*, the narrow-leaved form, and *Spiræa latifolia*, the broad leaved form. At the present time two distinct forms of plants through our range are referred either directly, or varietally to *Spiræa salicifolia*. The one is a narrow-leaved representative, its foliage being broadly or narrowly lanceolate, acute, finely and sharply serrate and dark green;

the plant being further characterised by its densely tomentose calyxes, pedicels and branchlets. The other has obovate, or elliptical leaves, much broader, therefore, and usually shorter than those of the preceding plant. Moreover they are scarcely acute, dentate-serrate and of a yellowish green. For further differences the inflorescence of this last form is nearly glabrous.

GOAT'S BEARD.

Arúncus Arúncus.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Rose.	White.	Scentless.	Missouri and Georgia northward.	May-July.

Flowers : minute ; dioecious, growing densely in paniced spikes. *Calyx* : five lobed. *Corolla* : with five rosaceous petals. *Stamens* : numerous, exserted ; filaments, thread-like. *Pistils* : mostly three. *Follicles* : glabrous, containing usually two minute seeds. *Leaves* : with long petioles, twice or thrice pinnate, the divisions with from three to seven ovate, or lanceolate leaflets, long pointed at the apex, and cordate or tapering at the base ; sessile or with short petiolules ; bright green and glabrous, sharply and doubly serrate ; thin. *Stems* : erect, somewhat branched, smooth.

Very numerous minute blossoms has the wind to ruffle when it catches in a gust the feathery, paniced and white spray spread by this striking looking goat's beard. Not all, however, of these plants cast about the same light, for the pistillate and staminate flowers, being borne in two households, show necessarily their points of differences. Over a good part of the country, as well as in the south, the plant seeks its home in woodland places, and cannot be well confused, for the only other one of the genus is a native of Japan.

AMERICAN IPECAC.

Porterdnthus stipulátus.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Rose.	White or pink tinted.	Scentless.	Louisiana and Alabama northward.	May-July.

Flowers : growing sparingly in spreading, terminal panicles. *Calyx* : cylindric, with five short teeth, persistent. *Petals* : five, oblong, or linear-lanceolate, narrowed into claws. *Stamens* : ten to twenty, included. *Leaves* : mostly three foliate, at least the uppermost sessile, with foliaceous, broad stipules ; deeply toothed and incised ; yellowish green, somewhat pubescent. *Stems* : erect ; simple or branched ; glabrous.

Somehow we have fallen into the way of thinking that plants throw the whole of their spirit and energy into their flowers ; but often we see it gleaming from such parts as highly coloured stems, or again in showy bracts which underlie the bloom. More decorative and constant indeed are the bright red stems of the Ipecac, when seen amid the wood's tangled growth,

than its rather scattered and evasive bloom. Its leaves have a bitter taste, something like tea.

P. trifoliatus, Indian physic, or Bowman's-root while very similar to its relative, is more generally smooth and has entire, less conspicuous stipules. Its leaves also are more regularly serrate along the margins, and the flowers, which are larger, do not grow quite so sparingly in the panicles.

PURPLE-FLOWERING RASPBERRY.

Rubus odoratus.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Rose.	Purplish pink.	Fragrant.	Tennessee and Georgia northward.	June, July.

Flowers : large, occasionally two inches broad and growing in terminal corymbs. *Calyx* : with five lanceolate, long-pointed lobes covered with a sticky pubescence. *Corolla* : with five spreading, rosaceous, petals. *Stamens and pistils* : numerous. *Fruit* : red, falling from the receptacle. *Leaves* : large, simple, with pubescent petioles and small lanceolate stipules, palmately three to five lobed, cordate at the base, the middle lobe considerably longer than the others ; netted-veined, serrate, and pubescent along the veins on the under side. A shrubby, branching plant, the stems covered with a glandular pubescence.

As late in the season as September there lingers in bloom through the mountains of the Appalachian system, and, in fact, in many other places, this noble raspberry. But especially as we travelled through this district we saw it again and again from mountain roads, or paths where it thrived luxuriously in cool, rocky places. In bloom and fruit often at the same time, it appeared strikingly handsome as its great leaves boldly stood out from jungles of surrounding greens, all kept bright and vivid by frequent rains and favourable soil. With the lightest touch the fruit fell freely into the hand ; a delicious morsel especially when the road is long and dusty.

BLACK RASPBERRY. THIMBLE BERRY. BLACK CAP.

Rubus occidentalis.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Rose.	White.	Scentless.	Missouri and Georgia northward.	May, June. Fruit: July.

Flowers : rather small, growing in terminal, compact corymbs, and with pedicels covered with many small prickles. *Calyx* : persistent ; with five lanceolate, pointed lobes. *Petals* : five ; rounded. *Fruit* : purplish black ; glaucous ; hemispheric. *Leaves* : compound, with long, slightly prickly stalks and early falling stipules ; three to seven foliate, the leaflets ovate, acuminate ; somewhat doubly serrate ; yellow-green above, lighter below and covered thickly with a white pubescence. *Stems* : very long ; prickly ; reddish brown and glaucous.

In common with the fruit of the beautiful purple-flowering raspberry and the species which follows, these little black caps have the trait of falling readily from their receptacles when they are ripe. Probably we all know

that they do this, quite as well as we vaguely recall their misty bloom, and yet, few may have stopped to think that this is a strong point of distinction between them and the blackberries, the fruits of which cling always to the receptacle.

R. strigosus, wild red raspberry, has bristly, light brownish stems, quite free from any bloom, and which are so branched that the plant appears very shrubby. Of the three to seven foliate leaves a very pretty feature is the dense silvery pubescence lining them on the under side, while the bright red fruit has also a faint, white bloom. From these two species of raspberries many of our cultivated ones have been produced.

BLACKBERRY.

Rubus Canadensis.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Rose.	White.	Scentless.	Southern Alleghanies and northward.	May, June. Fruit: August.

Flowers: growing loosely in leafy racemes with slender, ascending and pubescent pedicels with linear-lanceolate bracts at their bases. *Calyx*: with five, lanceolate, pubescent sepals. *Corolla*: with five rounded, rosaceous petals. *Stamens*: numerous. *Leaves*: three to five foliate with long petioles, pubescent when young. *Leaflets*: oval or ovate; long pointed at the apex and either rounded or narrowed at the base; dentate, often doubly so; thin, glabrous on both sides. A shrub, over three feet high and at times ten feet. *Stems*: ascending, mostly without thorns, richly coloured.

“Blackberries are green when they are red.”

An interesting bit of history in connection with this very handsome blackberry is that, through the misapplication of the name, it had been lost to science, and was only rediscovered in 1890, and then at an altitude of 3,500 feet in the mountains of western Virginia. Dr. Britton named it in honour of the collector, Rubus Millspaughii. As interpreted by Professor Brainerd, this is the same species which Linnæus in 1753 christened *Rubus Canadensis*, the specimens of which had been collected by the Swedish traveller Kalm from the French settlements of the St. Lawrence and Lake Champlain. It is, in fact, a common individual through high dry places in New England and the Adirondacks, as well as in the southern mountains and was thus the first of the American blackberries to be recognised by scientists. The fruits it bears, also, are quite the most delightfully flavoured of all the wild blackberries.

R. nigrobaccus, high bush blackberry, stands uprightly, and is abundantly found along waysides and through clearings. Its broadly oval fruit, with persistent stamens and calyx at its base; prickly stems and pubescent or glandular pubescent foliage; and its rather large white flowers growing on

bristly pedicels in a spreading raceme, proclaim the species. In most of the older botanies this plant is described under the name *Rubus villosus*, but it is now conceded that the scientific name here shown is the older and true one.

R. cuneifolius, knee-high blackberry, or sand blackberry with its numerous prickles, can also be known by its rather small, obovate leaflets, densely whitish woolly underneath; and which although finely serrate at their apices become entire towards their bases. The berries borne by the plant are large, while it is erect, shrubby in habit and almost exclusively found in sandy soil.

COMMON DEWBERRY. LOW RUNNING BLACKBERRY.

Rubus villosus.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Rose.	White.	Scentless.	Louisiana and Virginia northward.	June, July.

Flowers: about one inch broad, solitary, or a few growing at the end of lateral, leafy shoots. *Calyx*: with lobes, conspicuously woolly on the edges. *Corolla*: with five spreading, obovate petals. *Stamens*: numerous. *Fruit*: large; black. *Leaves*: three to seven foliate, with pubescent, slightly prickly petioles and linear stipules at their bases. *Leaflets*: ovate or oval, short stalked, or sessile; coarsely and sharply serrate; sparingly pubescent underneath; firm. *Stem*: trailing; naked, or with numerous small, reflexed spines.

Although for over a century the common dewberry has been in error passing under the scientific name of *Rubus Canadensis*, and as such is described in all but the most recent of our literature, it has now had rightfully restored to it the original name of *Rubus villosus* which long ago was bestowed by Aiton, an English botanist. It is a trailing species of dry, or sandy soil and often hugs the ground so closely that one is not aware of its existence until the ankles become entangled in its meshes.

R. hispidus, running swamp blackberry, also trails along the ground mostly in low wet places, and has branches which are more or less sprinkled with small bristles. The fruit is small and sour. Until late into the winter the delicate three-foliate leaves are charming, displaying then their autumn colours of crimson, scarlet and purple.

R. trivialis, southern dewberry, low bush blackberry, has an intensely prickly stem with interspersed bristles which give to it a purplish hue. Its bloom is large, the sepals being conspicuously reflexed, and the leaflets thick and persistent. The rather large fruit growing on leafy, prickly pedicels has a juicy and agreeable taste.

VIRGINIA STRAWBERRY.

Fragaria Virginiana.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Rose.	White.	Sweet.	Louisiana and Florida to New Brunswick.	April-June.

Flowers : growing with long, often recurved, bracted pedicels on hairy scapes. *Calyx* : persistent, with five pointed lobes surrounded underneath by five pointed bracts, and being scattered with silky white hairs. *Petals* : five, obovate, rounded, with very short claws. *Stamens* : numerous. *Fruit* : an ovoid, pulpy and scarlet berry. *Leaves* : from the base ; tufted ; with very long, densely-hairy petioles and sheathed with membranous stipules ; three-foliate. *Leaflets* : obovate, rounded at the apex, the terminal one wedge-shaped at the base, dentate, becoming entire ; ciliate and having both surfaces scattered with silky, white hairs. *Scape* : erect, hairy, naked.

We all know the wild strawberry plants and the simple loveliness of their flowers as they blow among the more common herbs of the pasture. Unobtrusively they live their lives near those in sympathy with them ; the lively-yellow fine fingers and the white and purple violets. All of their blossoms are as wild and sweet as any wildings, but a little gathered bunch of them droops lamentably in the hand. Still these plants have been extensively carried away for cultivation. Close to the ground they cling spreading themselves by runners. Thus they travel and increase their numbers. It has, in fact, been claimed that through this habit of straying, the "straberry," as in earlier Anglo-Saxon it was spelled, received its name.

In spite of the skill which we know to have been expended in producing strawberries of great size and excellence, it must still be conceded that they are lacking in much of the sweet fragrance and lusciousness of these small wild ones.

THREE-TOOTHED CINQUEFOIL.

Potentilla tridentata.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Rose.	White.	Scentless.	High Alleghanies and northward.	June, July.

Flowers : small ; growing in terminal and northward cymes and having bracted and pubescent pedicels. *Calyx* : persistent ; with five lanceolate pubescent lobes which alternate with an under row of five bracts. *Petals* : five ; obovate ; considerably larger than the sepals. *Stamens* : numerous. *Leaves* : three-foliate, with lanceolate stipules ; those clustered about the base with long petioles and oblanceolate leaflets, rounded, or squared at the apex where they show three, rounded teeth ; dark green and lustrous above, lighter below and hairy. Stem leaves often entire and becoming small and bract-like. *Stem* : two to ten inches high, shrubby, branched, pubescent.

Through our range it is only on the bare, rocky summits of such high

mountains as Pisgah, Craggy, Satula and Grandfather that this little plant becomes conspicuous. And perhaps it has chosen these haunts because comparatively few little ground plants are there to detract from its sprightly form and gay white flowers. This species is also known under the name *Sibbaldiopsis tridentata*, and is probably more correctly regarded as a separate genus from the little plant described below, which is a true *Potentilla*.

P. Canadensis, cinquefoil, or five finger, is the little individual common from Georgia to Quebec and familiar to all when found in old fields and sterile land by the side of the wild strawberry. Its solitary, quaint flowers are yellow and grow on long, thread-like pedicels; have their lateral leaflets divided to the base, and form therefore the supposed resemblance to five human fingers. Usually the plant is low and spreads itself by runners. Herbalists collect it when in flower.

WHITE AVENS.

Geum Canadense.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Rose.</i>	<i>White.</i>	<i>Scentless.</i>	<i>Missouri and Georgia and northward.</i>	<i>May-August.</i>

Flowers : rather small ; growing on pubescent and bracted pedicels in loose cymes. *Calyx* : persistent, with five lanceolate reflexed lobes and five small intermediate bracts. *Petals* : rounded, often shorter than the sepals. *Stamens* : numerous ; filaments, thread-like. *Fruit* : a rounded head of prickly carpels. *Leaves* : those from the base with long hairy petioles, lobed, three-foliate or pinnately divided, the terminal leaflet broadly ovate, the others narrower oval, or obovate in outline, unevenly serrate, or dentate, scattered on the upper surface with fine white hairs and pubescent underneath. *Stem leaves* : short petioled or sessile, three to five lobed or divided, arising from a pair of small dentate stipules. *Stem* : erect ; branching near the summit.

In shaded places there must verily be a dearth of bloom before one would linger long by the white avens. For it cannot be gainsaid that it is rather unattractive, with flowers too small to show much, and leaves so irregular and variously formed as greatly to disturb the composure. It is one of those individuals, however, that late in the autumn takes the wanderer in the woods unawares, and fastens the hooked style of its burrs securely on his clothing, no matter whether its hiding place is seen, or not. It is then no easy matter to pick them off, but the slower the process, as one travels along, and the greater the distances apart that they are thrown, the better is its service done, and the more extended becomes the plant's future holdings of the soil.

QUEEN-OF-THE-PAIRIES.

Ulmæria rubra.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Rose.	Pink or purple.	Fragrant.	Kentucky and Georgia to Pennsylvania and westward.	June, July.

Flowers: small; growing in open, cymose panicles. *Calyx*: five-lobed. *Corolla*: with five rounded, clawed petals. *Stamens*: numerous. *Leaves*: large, compound with long, smooth petioles and large, foliaceous stipules, the lateral leaflets sessile, all palmately three to five lobed, or divided, the sections being pointed, sharply and doubly serrate and incised; the terminal one much larger than the others; bright green and mostly glabrous. *Capsule*: small; tipped with a little beak. *Stems*: tall, erect; branched; glabrous.

Jostling among, and mingling with the procession of flowers, that no waning in its beauty may be felt, the queen-of-the-prairies takes its place in early June. And every inch a queen among flowers the plant looks when its brilliant spray is fully blown. It is one of the most lovely lights of the prairies, and also illumines many a strip of moist ground. It seems to have been thought that its leaf segments resemble the elm's foliage, and the generic name is in reference to this idea; the likeness, however, it must be confessed, is not sufficiently strong to present itself to every mind. Through the east sometimes the plant is seen as an escape from cultivation.

*Ulmæria rubra.**Neviusia Alabamensis.* (Plate LXXI.)

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Rose.	Greenish white.	Scentless.	Alabama.	April, May.

Flowers: showy; growing singly or in lateral, leafy clusters, on filiform, pubescent pedicels. *Calyx*: with five spreading, lanceolate, pointed and incised sepals. *Corolla*: none. *Stamens*: numerous; exserted. *Filaments*: thread-like. *Leaves*: simple, alternate; with short, pubescent petioles and bristle-like stipules, pointed at the apex and rounded at the base, doubly serrate; bright green and glabrous above, slightly pubescent underneath along the ribs. A shrub two to five feet high with reddish, leafy twigs.

Rare even among the rarest plants is *Neviusia Alabamensis*; for at only one place in the world is it known to grow in a wild state, and perhaps from there, before many years have passed, it will have altogether vanished. On



PLATE LXXI. *Neviusia Alabamensis*.
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the banks of the Black Warrior river at Tuscaloosa, Ala., it was first discovered, and upon the specimen sent to him, Dr. Gray formed a new genus of the Rose family, it being quite distinct in characteristics from even those members to which it was most closely related. But in naming the plant and dedicating it to Rev. R. D. Nevius, Dr. Gray was unfortunately in error. It is, in fact, only recently that it has been made known by Mr. Charles Louis Pollard that it was really first found by Professor W. S. Wymans, who, although in the company of Mr. Nevius on the eventful occasion, proceeded him some distance and made the discovery when quite alone. The illustration shows it as it occurs in cultivation at Biltmore where indeed it is very hardy. Its flower-clusters are beautiful, and most effective are its long white or creamy-white stamens.

TALL HAIRY AGRIMONY.

Agrimonia hirsuta.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Rose.	Orange-yellow.	Like apricots.	North Carolina northward.	June-August.

Flowers: small; perfect; regular, growing closely in slender, hairy racemes. *Calyx:* obconic, with five pointed lobes, covered with hooked bristles. *Petals:* five, rounded. *Stamens:* five to fifteen. *Fruit:* top-shaped; bristly. *Leaves:* large, with long, hairy petioles and two leaf-like stipules at their bases; compound; odd-pinnate. *Leaflets:* five to seven, oblong, or elliptical; sessile and coarsely serrate; bright green above; margins, and veins underneath ciliate, thin; smaller leaflets occurring between the pairs. *Stem:* two to five feet high, hairy.

This, the most common of our native species of agrimony, is one of the homely, old time flowers which seem to exhale certain scenes and associations. Our grandmothers knew its haunts amid woods and thickets and sought it to gather the leaves that they might make them into a tea-like beverage, or at least lengthen out the orthodox supply which they had in store.

For a long time it was thought by our botanists that a species of Linnaeus, *Agrimonia Eupatoria*, embraced many of the forms of this genus which occur in eastern America. This, however, was an error in conception which has since been rectified. That species is now known as being not indigenous to America.

A. inclsa differs from other American members of the genus in having incised leaflets with few large and salient teeth. In addition to the forms mentioned there is also one with elongated racemes of flowers, pubescent stems and tuberous roots which is known as *Agrimonia pumila*, or the small-fruited agrimony.

Still another species with as many as from nine to twenty-three leaflets and unusually small flowers and fruit is called small-flowered agrimony, *Agrimonia parviflora*.

CHEROKEE ROSE.

Rosa laevigata.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Rose.	White.	Scentless.	In cultivation.	May.

Flowers: large; solitary at the ends of the branchlets. *Calyx-tube*: urn-shaped; very bristly, its lobes spreading and pubescent. *Petals*: five, large; spreading; rounded. *Stamens*: numerous; inserted on the disk. *Leaves*: compound; odd-pinnate with mostly three lanceolate, or oblong leaflets; finely serrate; bright green and glossy above, lighter below; smooth, persistent. *Spines*: small; curved and extending along the under side of the mid-vein. *Stem*: trailing; prickly; smooth.

Who of the south does not know the Cherokee rose and regard it with fond admiration as it climbs, retwines and doubles itself over hedges, or up the sides of cabins and transforms them into flowery bowers almost unrivalled in beauty. And yet, although so widely distributed through the southern Atlantic and gulf states, the rose is not known to occur there in a wild state and just how it came to be so abundant in the former country of the Cherokee Indians is a question only partly solved. As truly wrapped in mystery is the history of its occupancy of the soil as that of the people whose name it bears. Should, however, the theory be true that the Chinese first inhabited this country, it may have been planted by them, for in parts of China as well as Japan what is probably the same species is conspicuous among the flora.

R. Carolina, swamp rose, leisurely opens and lets flare to the mid-summer air its deep pink blossoms, abundantly grouped in a terminal corymb or rarely solitary. Of the individual ones it is noticed that the petals at the apices are deeply and broadly notched while the calyx with its long-pointed lobes is covered with short bristles. The leaves are finely serrate. Long after the bloom has past the bush is still made attractive by the large, bright red and slightly hispid fruits which load it in the autumn. It is a bushy plant growing from one to eight feet high, the stems of which are armed with stout, recurved spines.

R. humilis, pasture rose, has also pink flowers, the five spreading petals of which are rounded or slightly emarginate at their apices. Very frequently they are produced singly, although their natural habit is to grow in few-flowered clusters. The plant is low and erect and the stems bear but few prickles which are straight and slender.

R. setigera, prairie rose, is indigenous from Florida and Texas to West Virginia and southern Ontario, westward. In Virginia and New Jersey it is sometimes seen as an escape from cultivation. Through the upper districts of the south, however, it climbs wildly about with long stems and produces in a corymb its pale pink, or white flowers. Its large, lanceolate sepals are



PLATE LXXII. CHEROKEE ROSE. *Rosa laevigata*.

Shrouding the low country there is sometimes an azure mist which, far from blending things together to the sight, makes them stand out boldly against a sultry sky. It is then that the fair petals of the Cherokee rose rest motionless and the scampering chameleon seeks his hidden hole. Restlessly a small, dull-coloured bird hops in and out among the blossoms, his round eyes on the alert. About the flowers the ground is covered with water, and with more coming from above they thus seek to save themselves from a ducking beneath the generous climber.

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strongly reflexed and have on them a velvety pubescence. They are also deciduous. When young the deep red hips are covered with a bloom.

R. rubiginosa, the sweet brier which strays along roadsides and in waste places and sends out a slender, wand-like spray of bloom shading from pink to white, is distinguishable through its small fragrant leaflets being doubly serrate and glandular pubescent underneath. It is an introduced rose, the "Eglantine," of which Chaucer, Spencer, and Shakespeare sung.

Happily there is little uncertainty about a rose being a rose, and the wild ones are known to the amateur as well as to the botanist; but it is perhaps the latter who mostly distinguishes between the species. Those that have been mentioned are notable ones through our range and beautiful as are all the members of this large genus.

Another exquisite one is known as Macartney rose, *Rosa bracteata*. It bears small, obovate and lustrous leaflets and many large creamy white flowers, the calyxes and stems of which are very pubescent.



THE APPLE FAMILY.

Pomdceæ.

Trees or shrubs with alternate, simple or compound leaves, early falling stipules and perfect, regular flowers, growing either solitary, or in raceme or cymose clusters. Calyx-tube adnate to the ovary. Petals : five, mostly clawed. Stamens : often numerous.

AMERICAN MOUNTAIN ASH.

Sorbus Americæna.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Apple.</i>	<i>White.</i>	<i>Scentless.</i>	<i>North Carolina along the Alleghanies, northward.</i>	<i>May, June. Fruit : September.</i>

Flowers : small; growing in large, flat compound cymes. *Calyx* : urn-shaped; five-lobed. *Corolla* : with five rounded, short-clawed petals. *Fruit* : numerous, bright red, berry-like pomes about the size of large peas and having a black spot at the apex. *Leaves* : compound; odd-pinnate, with reddish grooved stalks, and from nine to seventeen almost sessile, long-ovate or lanceolate leaflets, taper-pointed at the apex and pointed or rounded at the base; finely serrate; bright green above paler below and glabrous on both sides at maturity. *Bark* : dull brown; almost smooth; astringent.

This slender shrub, or sometimes tree is one more of the beautiful individuals which clothe the hillsides with life and colour. Early in the season often as many as a hundred tiny white blossoms are packed away in its

large broad clusters which later, after they have been duly fertilized, develop into heavy, toppling bunches of scarlet fruit. More noticeable than is the shrub than at any other time, as it casts perhaps the only bit of colour about the surrounding fully grown and intensely green foliage.

Hovering about this American species there is none, it would seem, of the superstitious fancy, the studied avoidance which so closely is associated with the Rowan tree, *Sorbus aucuparia* of Europe; long known for its intimacy with witches, its potency in casting spells and its ability to remove curses.

NARROW-LEAVED CRAB-APPLE. (*Plate LXXXIII.*)

Malus angustifolia.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Apple.</i>	<i>Pink or white.</i>	<i>Fragrant.</i>	<i>Florida and Louisiana to New Jersey and westward.</i>	<i>March-May. Fruit: September.</i>

Flowers: large; growing on long pedicels in loose few flowered cymes. *Calyx:* campanulate; pubescent, with five sharply pointed lobes. *Corolla:* with five rounded, clawed petals. *Stamens:* numerous. *Styles:* two to five, nearly separate. *Fruit:* a pome about an inch in diameter. *Leaves:* simple, with slender pubescent petioles; oblong-lanceolate, or ovate, bluntly pointed at the apex and rounded or narrowed at the base; serrate; on the shoots sometimes slightly lobed; dark green; shiny and glabrous above, sometimes pubescent beneath. Twigs, often spine pointed.

When the leaves of this small tree are very young, having, in fact, just timidly unfolded, its exquisite rosy and fragrant blossoms come into full bloom. It is then still so early in the season that the purplish grey colouring of its twigs forms for them a misty background, and only such other wide-awake shrubs as the thorn, the shad-bush and the spice-bush are laden with flowers. But everything is stirring: the march is onward. Long before we would have them go, however, the flower's petals are carried away by the wind and its calyx-tubes begin to enlarge into small green pomes slightly flattened at their extremities, hard and unsympathetic to eat, and yet which are delightfully fragrant.

M. coronaria, sweet scented crab tree which also grows in thickets and woods and from South Carolina extends as far northward as Ontario, produces larger and even more beautiful flowers than its relative, and they also are very fragrant. Its leaves are broader than the others and have toothed, or often lobed edges and decidedly rounded or cordate bases. When they are young rich shades of red and maroon mingle on their otherwise green surfaces, and on the lower surface they are sparingly pubescent along the veins. Only as they grow old do they become entirely smooth and settled down to a sombre shade of green. In September the fruit ripens, a fragrant, waxy, greenish yellow pome, much larger and more

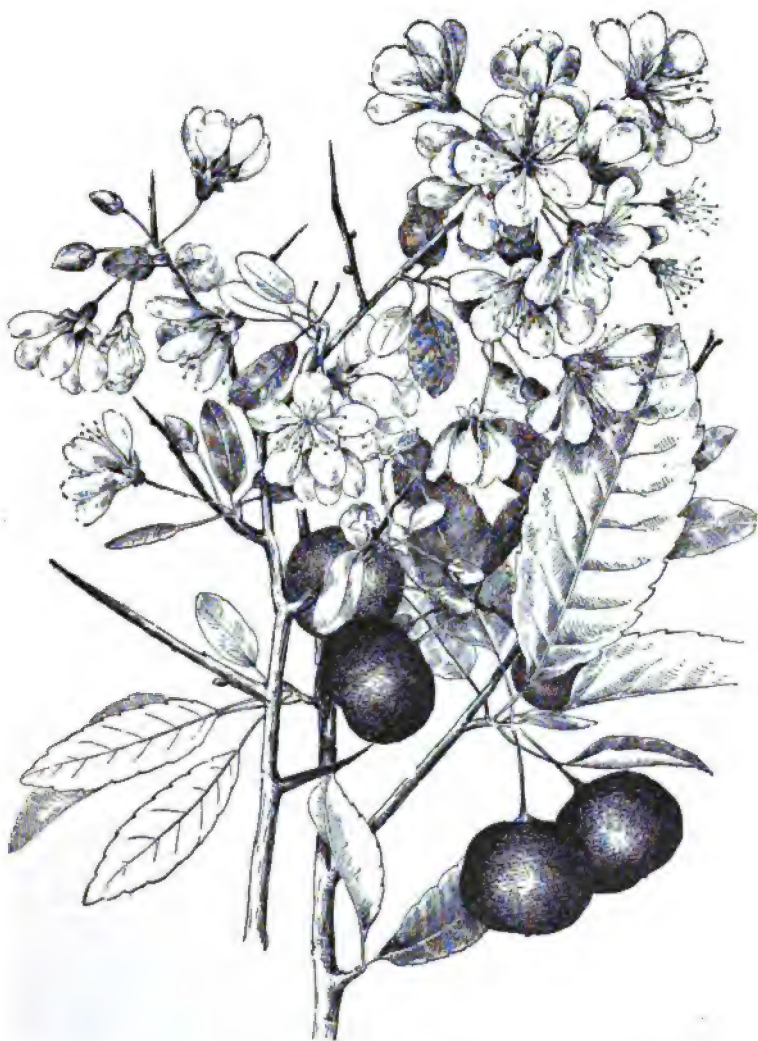


PLATE LXXIII. NARROW-LEAVED CRAB-APPLE. *Malus angustifolia*.
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flattened than those of the narrow-leaved crab. Although very sour they make readily into preserves and jellies of excellent quality.

BLACK CHOKEBERRY.

Aronia nigra.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Apple.</i>	<i>White.</i>	<i>Scentless.</i>	<i>Florida northward.</i>	<i>March-June.</i>

Flowers : small, growing in terminal compound, glabrous cymes. *Calyx* : urn-shaped, with five pointed lobes. *Corolla* : with five, rounded, spreading petals. *Stamens* : numerous. *Styles* : three to five. *Fruit* : a small purplish black pome. *Leaves* : simple, with short petioles and a pair of small stipules ; oval, long pointed at the apex ; pointed or rounded at the base ; finely serrate ; glabrous.

This small shrub with its greyish purple or reddish twigs grows sometimes to a height of twelve feet and is found in low woods, or swamps. Through the Alleghanies, however, and on such peaks as Mount Mitchell and Roan mountain it ascends as high as six thousand feet above the sea level. A peculiarity of its small purplish black pomes is that they are not at all indented or hollowed at their bases. This species and the one which follows are the only members of the genus.

A. arbutifolia, red chokeberry or dogberry tree, although a very similar shrub to the one preceding, bears fruit which when ripe is a bright red. On the cymes and under surfaces of the leaves also there is a white tomentum. These peculiarities, combined with the fruit's colour, afford ample means for its identification.

SHAD-BUSH. SWAMP SUGAR-PEAR.

Amelanchier Botrydium.

FAMILY	COLOUR	HEIGHT	RANGE	TIME OF BLOOM
<i>Apple.</i>	<i>White.</i>	<i>10-30 feet.</i>	<i>Florida and Louisiana to New Brunswick.</i>	<i>April, May. Fruit: June, July.</i>

Flowers : large ; growing profusely in terminal racemes and appearing with the leaves. *Pedicels* : woolly. *Calyx* : with five, pointed lobes which become glabrous with age. *Corolla* : with five oblanceolate, or linear-spatulate petals, often three-fourths of an inch long, entire. *Stamens* : numerous, on the throat of the calyx. *Styles* : two to five, pubescent at the base. *Fruit* : dark blue, or reddish, globose pomes showing the persistent calyx lobes at their summit. *Leaves* : with long, woolly petioles ; ovate, or oval, pointed at the base ; finely serrate ; bright green and glabrous above, covered underneath with a dense, white tomentum at least when young. A shrub, or small tree with greyish or reddish twigs.

Full of strength and beauty seem to be the soft sheets of bloom spread by the shad-bush as in earliest spring it awakes from its winter's sleep. The foliage then, however, has a tender look from the dense white wool

with which it is covered. Later this drops off as the climate softens and the leaves become more accustomed to the atmosphere. Through the gulf states and along the mountains northward to New Brunswick, in swamps and moist soil the shad-bush is known as a shrub, or sometimes it assumes an arborescent habit and grows as high as thirty feet. A sweet, dainty morsel is its fruit which perhaps has been relished more by the Indians than any other people, and which as well as eating fresh they manipulate into a dried paste to put by for winter use. Children, however, and birds are not far behind them in locating its whereabouts, and knowing just when the time has come to gather its offerings.

A. Canadensis, June-berry, May-cherry, or service berry shows its leaves to be only sparsely pubescent, even when young. All through the south this species seems to be known in the vernacular as the "sarvice tree," and the sweet quality of its fruit is no secret. Those that find it eat it as eagerly as they would cherries. It is even made into pies. The mountaineers' vigorous method of procuring it, however, is usually to chop the tree down, so in many places they are becoming rather scarce. In its best estate the June-berry reaches a height of sixty feet, but usually is not over twenty-five feet tall.

POMETTE BLEUE. (*Plate LXXIV.*)

Cratægus brachyacantha.

FAMILY	COLOUR	SIZE	RANGE	TIME OF BLOOM
Apple.	White.	30-50 feet.	Louisiana and Texas.	April.

Flowers : borne on lateral branchlets in glabrous, compound corymbs. *Calyx* : obconic, with five small, triangular, persistent sepals. *Corolla* : with five nearly orbicular white petals, which in drying turn to a bright orange colour. *Stamens* : usually twenty, borne on slender filaments. *Fruit* : which matures and drops in August, subglobose; from one-third to one-half an inch in diameter; bright blue; glaucous. *Leaves* : lanceolate-oblong, ovate or rhombic; acute or rounded at the apex; narrowed at the base into short petioles; crenate-serrate; glabrous; dark green and lustrous. *Bark* : dark brown, deeply furrowed and scaly.

First discovered by the Scotch botanist and explorer Thomas Drummond, but made known and its true character revealed by Dr. Charles Mohr, who, some fifty years after the original discovery, gathered specimens from trees growing in the vicinity of Minden, Louisiana, in the autumn of 1880. This, the only blue fruited thorn in the south, is perhaps the largest and most beautiful of the genus. It is called Pomette Bleue by the French Acadians of Louisiana, and, on account of its symmetrical outline, pleasing foliage and attractiveness of both flowers and fruit, is well deserving of a home in southern gardens.

The genus *Cratægus*, as treated in the copy of Chapman's *Flora of the Southern United States* before me, embraces descriptions of fifteen forms,

but since the publication of that work not less than seventy new species from the same territory have been proposed, and the outlook for many more, I am informed, "is hopeful!"

It was not a difficult task to dispose of the southern thorns under the classification in vogue a few years ago, especially as so many of the forms with large red fruit could, with but slight chances for adverse criticism, be referred to *Cratægus coccinea*, and the yellow or orange fruited forms as safely called *Cratægus flava*. But this kind of easy botany has faded. *Cratægus coccinea* as demonstrated by Professor Sargent, does not occur in the south, and the many forms heretofore referred to *Cratægus flava* have been split up into nearly as many species. The thorns then, instead of representing a moderate number of species, really turn out to embrace a whole army of distinct kinds.

Not until a concise publication reveals the true relationship and distinctions between the multiplicity of species, will the casual student be likely to interpret many of them with much assurance of correctness. The following species, however, are of comparatively easy identification, and will serve us as types for study.

C. æstivdlis, May haw, is a tree sometimes twenty or thirty feet tall, an inhabitant of pine-barren ponds and the sandy margins of streams. Although extremely southern in distribution, it enjoys a wide range of notoriety on account of the delicious preserves and jellies made from its bright red fruit. During May the markets of many southern towns dispose of large quantities of the fruit, which is eagerly gathered in all the region where it abounds. The May haw is the first of its kind to blossom and ripen its fruit, and besides, is readily known by the rusty tomentum on the under surface of the leaves.

C. apiifolia, parsley haw, grows from the Atlantic coast region of southern Virginia to central Florida, extending westward through the Gulf states to Texas and Arkansas. It is, indeed, fortunate that this beautiful shrub or small tree is endowed with so wide a range. While extremely rare in gardens it is one of the most delicate and pretty of the thorns. Its beautiful leaves are pinnately five to seven cleft, the segments again incisely lobed and serrate, of a soft, bright green colour. The small oblong fruit is bright scarlet at maturity, persisting on the branches until the beginning of winter.

C. cordata, Washington thorn so much used at one time, especially in the middle states for hedges, is a familiar object to many of us. The sharply three to seven lobed smooth leaves, which are cordate or truncate at the base, and the small bright red fruits easily distinguish the species.

C. punctata, large-fruited thorn, produces, as the common name implies, very large globose pomes, either clear red or bright yellow. These thorn-



PLATE LXXIV. POMETTE BLEUE. *Crataegus brachyacantha*.

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apples, as they are popularly called by the children, are very palatable when fully ripe and many are gathered by them. The large-fruited thorn is found in the mountains of Virginia and North Carolina, but more common further north.

C. uniflora, dwarf thorn, is a shrub a few feet tall with mostly solitary flowers and globose greenish-yellow fruits. The leaves are obovate, very blunt at the apex and narrowed to a nearly sessile base. In some sections, notably in southeastern Tennessee, where the dwarf thorn is abundant, many farmers turn their hogs into the thickets to fatten on the abundant crops of haws as they ripen and fall during September and October.

C. Vailia, Miss Vail's Haw, *Plate LXXXV*, is somewhat similar to the last species, but with smaller red fruit, pointed leaves and has the flowers often in threes. This species occurs in woods and thickets in the mountains of North Carolina and Virginia.

Text contributed by Mr. Chauncey D. Beadle.



THE PLUM FAMILY.

Drupaceæ.

Trees or shrubs with simple, alternate, petioled leaves which are serrate, early falling stipules and mostly perfect, regular flowers growing in various forms of inflorescences. The bark, foliage, and seeds with a bitter taste.

Prunus Alabamensis. (Plate LXXXVI.)

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Plum.</i>	<i>White.</i>	<i>Scentless.</i>	<i>Mountains of Alabama and Georgia.</i>	<i>May.</i>

Flowers: growing in long, slender racemes which terminate leafy pubescent shoots. *Calyx*: five-toothed; persistent. *Corolla*: with five small, obovate petals. *Stamens*: on the calyx. *Fruit*: small, roundish drupes. *Leaves*: with petioles covered with pale or eventually reddish, woolly pubescence; oval, obovate or elliptical, pointed or rounded at the apex and narrowed or more abruptly contracted at the base; serrate; bright green and glabrous above, paler underneath and pubescent along the curved ascending veins. *Young twigs*: reddish brown, or almost black, and covered with dot-like excrescences.

When Dr. Mohr first found this cherry growing near Birmingham, Alabama, he saw at a glance that it was different from all others that he knew, and also when he sent a specimen of it to Professor Sargent it received instant recognition as a distinct species. It attains the proportions of a small tree, usually growing on dry ridges.



PLATE LXXV. MISS VAIL'S HAW. *Crataegus Vailæ*.
(252)

P. serotina, wild black cherry, rum cherry or cabinet cherry grows at its best to be a large fine tree when, as is well known, its timber of firm texture and splendid colour is much valued for use in cabinet work. On the slopes of the Alleghanies, where it thus appears and where once its lustrous bright foliage, gay yellow in the autumn, made it a familiar individual it is now but little seen except as small individuals, and throughout its range it is steadily falling under the axe. In the bud its leaves are folded together lengthwise and not until they are well grown do the dainty, long racemes of bloom unfold. To the round black fruit there is a pleasant, vinous flavour and often housewives prepare with it a good although rather insidious drink. From the bark of the tree, collected in the autumn, an aromatic, bitter tonic is made, and is of considerable repute for benefitting pulmonary troubles.

P. Virginiana, choke cherry, a bushy spreading shrub, seldom over fifteen feet high, grows along roadsides and rocky banks in the mountains of North Carolina and northward. Its erect compact racemes of delicate white blossoms terminate the season's shoots while later in drooping, heavy ones hang reddish drupes finally turning to black. Most decorative are they and full of fine rich colour before they become the orthodox tone at maturity. Both the bark and drupes are very astringent and much used in medicinal ways.

P. Pennsylvanica, wild red cherry, bird, or pigeon cherry, which when well grown is quite a shapely, rounded tree, has long branches prolific in the season with fine white blossoms hanging on slender pedicels in corymbs, and produced from lateral buds. By this, its inflorescence, it is distinguished from the three already mentioned cherries, the flowers of which all grow in racemes. Its lustrous leaves are gracefully shaped, often of a bluish tint of green and retain always a somewhat crinkled edge from their position when folded lengthwise in the bud. The small, sour and bright red fruit is probably known to us all. While occurring southward as far as Georgia and in the Alleghanies on such high mountains as Grandfather, the wild red cherry is in general a northern tree.

Prunus injuncunda. (Plate LXXVII.)

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Plum.	White.	Faint.	Georgia and Alabama.	April. Fruit: July.

Flowers: growing on long thread-like pedicels in prolific lateral clusters and appearing before the leaves. *Calyx*: with five spreading, pointed lobes. *Corolla*: with five rounded petals, narrowed into claws, early falling. *Stamens*: numerous, exserted. *Fruit*: an oblong, purplish drupe, glaucous. *Leaves*: simple, oval, pointed at the apex and tapering, or rounded at the base; finely serrate, bright green and glabrous above, pubescent underneath. *Bark*: dark, and with many orange coloured excrescences.



PLATE LXXVI. *Prunus Alabamensis*.
(254)

Hardly is there a tree or shrub of more delicate and chaste beauty than this wild plum when in full bloom and the tiny young leaves are just beginning to show themselves. Very gracefully then the white flowers hang from pedicels almost as fine as threads. The fruit is extremely bitter according to the published statements of Dr. Small, who discovered the species in the region of Stone Mountain, Georgia, in July, 1893.

P. Americana, wild red or wild yellow plum, becomes when a tree about thirty feet high, but quite as often it remains a shrub. In lateral simple umbels the flowers grow and appear before the sometimes doubly serrate leaves. The rounded fruit is red, or orange, of a translucent attractive brightness and has an unusually tough skin. At best it is not very good to eat but makes up into really excellent preserves.

P. umbellata, a shrub or small tree, was in fruit when I saw it in a field near Jacksonville, Florida. It has a similar look to *Prunus injuncunda* and belongs to the group of wild plums bearing their flowers in lateral, simple umbels which blow before the thin, smooth leaves unfold. Quite as early as February in some seasons, *Prunus umbellata* is covered with its white, rather small blossoms, the petals of which are raised on distinct claws. In August the fruit ripens. This is round and dark purplish, covered with a bloom, and altogether too sour to be edible. It is readily distinguished from *Prunus injuncunda* by its smooth leaves and shoots.

P. angustifolia, chickasaw, or hog plum, occurs as a small tree with very narrow, lanceolate leaves, folded together lengthwise when young and which are then slightly curved. The flowers grow abundantly in short lateral umbels on the wood of the preceding year and usually their petals have fallen before the new growth of the season appears. The plum is red with a thin skin and has but little bloom. In the south it is common about old homesteads.

CHERRY LAUREL. WILD ORANGE.

Prunus Carolinidna.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Plum.	White.	Scentless.	Florida and North Carolina westward.	February, March. Fruit: autumn.

Flowers: growing closely in short, erect, axillary racemes. *Calyx*: top-shaped, the lobes deciduous. *Petals*: very small. *Stamens*: numerous, much exerted. *Fruit*: ovoid, black, lustrous. *Leaves*: long-oblong, or ovate-lanceolate, pointed at both ends, mostly entire, thick and highly lustrous above; coriaceous; evergreen.

Very pretty and well shaped does this small tree appear as along the banks of rivers it retains throughout the year its thick, glossy leaves. The fruit also remains on the branches over the winter, or until the opening of the flowering season. By the way its blossoms are grouped in erect racemes, much shorter even than the leaves, the cherry laurel, as it is appro-



PLATE LXXVII. *Prunus injucunda*.
(256)

priately called, can readily be known from the other wild plums with which it might be confused.



THE MIMOSA FAMILY.

Mimosaceæ.

A group including trees, shrubs and herbs with mostly compound, alternate leaves, commonly twice or thrice pinnate, and regular, perfect flowers, which grow in heads, racemes, or spikes.

SENSITIVE BRIER. GANDER TEETH.

Morongia uncinata.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Mimosa.	Pinkish lavender.	Fragrant.	Texas and Florida to North Carolina.	May-August.

Flowers : small ; regular ; growing in round, dense heads on long, axillary peduncles, either singly, or a few together ; the peduncles beset with numerous, sharp prickles pointed downward. *Calyx* : minute ; five toothed. *Corolla* : funnel-shaped ; five-cleft. *Stamens* : eight to twelve. *Legumes* : slender ; covered with short spines. *Leaves* : bi-pinnately divided and having eight to fifteen pairs of minute, elliptic, oblique leaflets, obtuse at the apex and rounded at the base ; ciliate ; sensitive ; the petioles covered with numerous, hooked prickles. *Stem* : grooved ; two to four feet long, decumbent and armed with prickles.

As the barefooted mountaineer of the south strides in search of his livelihood over many a sandy meadow, this small plant, shrinking and very pretty, causes him deep annoyance. In return for being stepped on, it gets between his toes and fastens there its innumerable little prickles. No mood is he then in to see its beauty. He detests it. But to the wellshod flower seeker it presents one of the sweetest, most unique personalities of all the native plants. Like a ball of pinky fluff the tiny bloom hides among the grass and when it is picked the curious leaflets show their sensitiveness to being touched by folding together and clinging tightly with their prickles to the fingers or clothing. It is a most difficult plant to handle. The bloom also fades quickly while emitting a scent like that of hyacinths.



Morongia uncinata.

Neptunia Floridana.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Mimosa.</i>	<i>Yellow.</i>	<i>Scentless.</i>	<i>Florida to Louisiana.</i>	<i>April-June.</i>

Flowers : growing thickly in nodding, rounded, or oval heads at the ends of long, slightly scabrous, axillary peduncles. *Stamens* : consisting of a number of narrow, petal-like, sterile filaments and ten fertile ones. *Legumes* : oblong ; slightly tipped at the apex, glabrous, growing in rounded clusters. *Leaves* : abruptly twice-pinnate with ovate pointed stipules, the leaflets very tiny, numerous, oblong, fringed on the margins. *Stem* : two to three inches long ; ascending or spreading ; roughened by minute, scattered, scabrous pubescence.

In dry, sandy soil are sometimes seen the little yellow balls of this plant's bloom. No doubt its personality would readily suggest its kinship with the sensitive brier, but, although more or less rough, it is not covered with the prickles and has, therefore, not the means of cleverly thrusting itself on the people's attention. So it passes without even a common name.



THE SENNA FAMILY.

Caesalpindceæ.

A group including trees, shrubs and herbs with simple, or compound, alternate leaves which usually have stipules ; and irregular, or almost regular flowers, often appearing pea-shaped. Calyx : usually in divisions of five. Petals : usually five and imbricated. Stamens : ten or less. Fruit : a legume.

RED BUD. AMERICAN JUDAS-TREE.

Cercis Canadensis.

FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
<i>Senna.</i>	<i>Crown, spreading, flat.</i>	<i>10-50 feet.</i>	<i>Texas and Florida to New Jersey.</i>	<i>February-April.</i>

Bark : purplish grey. *Leaves* : with petioles swollen at the ends, and early falling stipules ; broadly ovate ; truncate or cordate at the base, the apex contracted into a blunt point where the mid-vein sometimes projects a bristle ; palmately-veined ; entire ; glabrous, or slightly pubescent in the axils of the under veins. *Flowers* : several, growing together on slender pedicels in sessile, umbel-like clusters on the old wood and appearing before or just as the leaves unfold ; acrid. *Calyx* : red. *Petals* : rosy pink, the wings over-lapping or covering the small standard. *Pods* : linear oblong ; winged along the seed-bearing margin and containing many flat, puckery seeds.

On grey, dull days when the spring is approaching, it is fairly startling to look up from one's surroundings and find the red bud in bloom ; for like the reddest burst of sunset it lightens up the tree's bare branches and all

the landscape. In the south it is one of the earliest of the flowering trees, while further northward it delays its bloom sometimes until April. Frequently not a leaf is to be seen on it when the quaintly-formed, almost pea-shaped little blossoms burst forth. They fairly cover in places the purplish grey bark and are of two shades of deeply tinted pink.

About our American plants, we find very frequently that it has been through their similarity to European ones that the early settlers of this country bestowed on them certain common names. So this beautiful plant is called Judas-tree, as is the European species, *Cercis siliguastrum*, although it could never have been the traditionary one from which the Apostle is said to have hung himself. Neither has it in America been a supposed favourite with witches; the chosen one to which they draw near at midnight.

WILD SENNA. AMERICAN SENNA.

Cassia Marylandica.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Senna.</i>	Deep yellow.	Scentless.	Florida and Louisiana to New England.	July, August.

Flowers : growing on slender axillary peduncles in many flowered racemes. *Calyx-lobes* : five, oblong, blunt-pointed. *Corolla* : nearly regular, with five spreading, clawed petals. *Stamens* : ten, three being imperfect, the others with large, up-curved anthers. *Pistil* : one; style woolly. *Pods* : long, linear, slightly curved and pubescent at least when young with fine hairs. *Leaves* : with long petioles, at the base of which is a club-shaped gland, and early-falling, linear stipules; abruptly pinnate with from twelve to twenty oblong, obtuse leaflets, with short petiolules and tipped at the apex with the midrib; entire; smooth. A perennial herb, four to ten feet high, branched; smooth, or slightly pubescent.

How much of cheeriness there is in the autumn about the bright yellow flowers of this senna, as perhaps with the tall wild bellflower, it occurs amid wooded, ferny places, or even approaches the cardinal flower by some low-lying swamp. In its own way, it is quite as beautiful as they, and grows in certain parts of the south most abundantly. It is also much cultivated for a border plant. After its season of bloom has passed its pods and leaflets are collected to be dried and then used in many similar medicinal ways to those for which the oriental senna has attained renown. It is very noticeable that the sensitiveness of the leaves of certain sennas causes them to close whenever touched, or rudely brushed against and it was this peculiarity of some plants which early observed by primitive people caused them to believe in their being inhabited by distinct and personal spirits.

C. Chamæcrista, large sensitive plant, or partridge pea, (*Plate LXXVIII*), a spreading, erect individual is considerably smaller than the wild senna and bears small abruptly pinnate leaves with from ten to fifteen pairs of oblong-



PLATE LXXVIII. LARGE SENSITIVE PLANT. *Cassia Chamæcrista*.
(260)

olate leaflets, rounded at their apices. The flowers, however, are large and most showy, two or four of them growing on axillary, thread-like peduncles. At their bases the lower petals are somewhat spotted with purple, while the stamens are all anther-bearing. The pods vary from an inch to an inch and a half in length and in manner of growth is straight and ascending. Along dry waysides, there is hardly in the late summer a more gay or beautiful plant to be found. Its leaflets also are curious, being very sensitive.

C. nictitans, wild sensitive plant, or sensitive pea, is known by its small flowers which grow on short pedicels, and its numerous and also small leaflets. The five stamens are all anther bearing, while its pods and stems are quite pubescent.

C. occidentalis, coffee senna, a native of Virginia and the states southward, grows in a branching, bushy way to about five feet high. It is a showy plant, distinctively marked by its large ovate-lanceolate leaflets, pointed at the apex, and its brilliant deep orange flowers. Of their ten stamens the upper three are imperfect. In the slightly curved and linear pods there are found numerous seeds. These the negroes make into what they call Magdad coffee. As late as early November, along the St. John's river, I picked a number of the blossoms which still were fresh and charming.

C. Tora, low senna, springs up along river banks and seems also to care to follow railways from Florida and Missouri to southern Pennsylvania. Its large leaves are composed of from four to eight broadly obovate, thin leaflets, and its long, slender pods recurve in semi-circles. It is an annual with glabrous parts.

WATER LOCUST. SWAMP LOCUST. (Plate LXXIX.)

Gléditsia aquatica.

FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
<i>Senna.</i>	<i>Irregular, flat-topped crown.</i>	<i>40-60 feet.</i>	<i>Florida to South Carolina and Indiana.</i>	<i>May, June.</i>

Bark: reddish-brown or grey, fissured. *Spines*: compressed; very stout, sometimes with short lateral branches, smooth and lustrous. *Leaves*: with long petioles, once or twice abruptly pinnate and having from ten to twenty-six, or more very short stalked leaflets, which are ovate-lanceolate, blunt at the apex, mostly rounded and one sided at the base; crenulate; thick; glabrous. *Flowers*: small; greenish white; growing in spike-like, drooping racemes. *Calyx*: campanulate; three to five cleft, pubescent. *Corolla*: with as many divisions as the calyx, the lobes spreading, equal and sessile. *Stamens*: six to ten. *Legumes*: reddish; obliquely oval; flat, tapering at both ends and projecting a point, glabrous, containing one seed.

The water locust which was first described by Mark Catesby is only seen



PLATE LXXIX. WATER LOCUST. *Gleditsia aquatica*.
(262)

at its best when abundantly hung with its reddish, flat pods, and they in outline are so very different from those of other trees that there is little excuse for confusing it with another. Early in the autumn they fall, as in August they have reached maturity. Sometimes the great spines look almost black and add a certain curious charm to its other attractions.

G. triacanthos, honey locust, or honey shucks, the latter a more familiar appellation to the natives who gather its pods and eat the sweet, pulpy substance between the seeds, is a large, graceful tree, marked by an unusually fine spray of foliage. More than by any other feature it is known through its great reddish brown pods, measuring from nine to twenty inches long. They are curved and in drying twist and retwist while they open and skilfully scatter the seeds in diverse directions.

KENTUCKY COFFEE TREE. STUMP TREE.

Gymnocladus dioica.

FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
<i>Senna.</i>	<i>Narrow, branches ascending.</i>	<i>40-80-110 feet.</i>	<i>Tennessee, northward.</i>	<i>May-July. Fruit: September, October.</i>

Bark : grey tinged with red, coarse, rough, separating into persistent scales. *Branches* : smooth, without thorns. *Leaves* : one to three feet long with lanceolate stipules; bipinnate, petioled; pinnæ five to nine, either odd or evenly pinnate; leaflets seven to fifteen, or the lowest pinnæ with a single leaflet; they are ovate, taper pointed at the apex and rounded or cordate at the base, entire, fringed about the margins, dark green and glabrous above, pale yellow-green below and slightly pubescent along the ribs. *Flowers* : greenish white; dioecious, growing in terminal racemes. *Legumes* : broad; six to ten inches long; reddish brown; flat; glaucous and containing several hard and grey seeds.

The study of forest trees during the winter is to many quite as fascinating, quite as replete with interesting facts as when they are shaking their green umbrellas over their heads. This one, for instance, has at this time a very individual look. It appears stump-like and weather beaten, as though it were quite shattered with wrestling with strong gales. Then also through its branches hang unopened its great, ungainly looking pods which do not trouble to release their seeds until the approach of early spring. Sometimes they are turned to almost black and appear miserably dead. The tree is not common and is the only member of its genus. At present it is being considerably used for ornamental planting. It is related that during the Revolution, the natives in remote places west of the Alleghanies used its seeds as a substitute for coffee, and in fact, they still call the fruit, coffee nuts. In homeopathic practice also the leaves and seeds are deemed of service.

THE PEA FAMILY.

Papilionaceæ.

A large group including trees, shrubs, herbs and vines with alternate, usually compound leaves, and irregular flowers growing in various forms of inflorescences and which are mostly known by their papilionaceous corollas. Fruit : a legume.

AMERICAN OR KENTUCKY YELLOW-WOOD. VIRGILIA.

Cladrastis lutea.

FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
Pea.	Crown, broad; branches spreading.	30-50 feet.	Western North Carolina to Kentucky and Tennessee.	May, June.

Bark: silvery grey, close. *Branches:* ashy, or reddish. *Leaves:* compound, with stalks hollowed at their bases and enclosing the buds of the succeeding year; odd-pinnate; with from seven to eleven oval or ovate leaflets (the terminal one narrowed at the base) pointed at the apex and rather blunt at the base; entire; light green above, lighter below, glabrous. *Flowers:* white; fragrant, hanging in full terminal panicles, often a foot or more long. *Corolla:* papilionaceous; the standard large and turned backward. *Fruit:* many linear pods each containing from four to six seeds.

Not so many years ago it was reported that the people of the south had suddenly awakened to the beauty and rarity of this tree. It was even stated in local newspapers that near Nashville, Tennessee, there had been discovered a tree thought to produce the shittim wood mentioned in the Bible, and of which the tabernacle was built. Perhaps this was a little imaginative. But through the forest in rich, rocky soil the yellow-wood is indeed a rare and most beautiful tree. It is, moreover, always beautiful. After its long fragrant bunches of milk-white flowers have faded its leaves turn in the autumn to golden yellow, while in the winter its light grey bark recalls somewhat that of the beech. Its wood is unfortunately rather brittle, causing often the boughs to break in high winds. From it sometimes is extracted a clear yellow dye. It was the elder Michaux who first described the tree under the name of *Virgilia lutea*, but later Rafinesque who found it was not properly called, created for it the present genus.

Thermopsis Caroliniana.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Pea.	Bright yellow.	Scentless.	Alabama to North Carolina.	May-July.

Flowers: growing closely in long, terminal and villous racemes. *Calyx:* persistent; bell-shaped; five-toothed and covered with soft, white hairs. *Corolla:* pa-

pilionaceous; standard rather small, deeply notched at the apex; wings; long, narrow; keel, straight, rounded. *Stamens*: ten, incurved, separate withering-persistent. *Legumes*: linear and projecting a remnant of the style, tomentose. *Leaves*: long-petioled, with conspicuous leafy stipules at their bases; three-foliate, the leaflets ovate, or obovate-oblong; entire; thin, bright green above; lighter below and silky. *Stem*: three to five feet high; stout; glabrous.

Somewhat these rigid, upright sticks of bloom remind us of the great mullen; for their flowers are also a bright, gay yellow, and not of a pea-like shape. Usually we find them fully blown at the top of the shaft, although its lower part is already surrounded with pods, looking as fluffy from their white fuzz as ducklings which have but shortly pipped the shell. Among them the persistent calyx has a dried and weather beaten air. The leaves of the plant also being graceful it is altogether a charming individual to meet in its mountainous haunts.

BLUE FALSE INDIGO. WILD INDIGO.

Baptisia australis.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Pea.	Indigo-blue.	Scentless.	Georgia to Pennsylvania, and westward.	June, July.

Flowers: large; growing abundantly in erect racemes, often twelve inches long; the bracts early falling. *Calyx*: campanulate. *Corolla*: papilionaceous, the banner being somewhat shorter than the wings and keel. *Stamens*: ten. *Legumes*: one and one half inches long, oblong; inflated, tipped with the style. *Leaves*: three-foliate, with short petioles and lanceolate, leafy, stipules which are persistent. *Leaflets*: oblanceolate, or cuneate-obovate, mostly rounded at the apex; almost sessile; entire. *Stem*: two to six feet high; glabrous.

Almost constantly through the summer the flower-seeker is meeting with members of this large genus, and while in general there is an unmistakable look about them all, it is often rather puzzling to definitely locate them in the family. That the wild indigo, however, bears blue flowers is enough to distinguish it from those others which have herein been included. Among the country people they are all rather well known, especially for the purpose of making domestic dyes, and in their selection of them there is considerable distinction between the species.

B. alba, wild white indigo, a much branched plant, bears smaller leaflets and flowers than the false blue one. The leaflets also are mostly oblong, blunt at the apex and appear very symmetrical and smooth. The blossoms are white. They grow loosely in lateral racemes and are very dainty, having a small, ovate and recurved banner. In drying the plant remains unchanged in colour.

B. leucodantha, large white wild indigo, an attractive bushy plant, is smooth throughout and bears an abundance of three-foliate leaves which in drying turn to black. It may, however, most readily be known by its beautiful

long raceme of snow-white blossoms, the standards of which are upright, reflexed and shorter than the other petals, while the keels are large and broad. It grows in sandy soil and from Florida to North Carolina.

B. tinctoria, yellow, or indigo broom, or horse-fly-weed, is again known by its very small three-foliate glabrous leaves, and its bright yellow flowers, in terminal racemes. It is bushy and spreading and much seen in the Alleghany and Cumberland mountains where it is used about the bridles of horses to keep off annoying flies. In July and August when laden with these bright pea-shaped flowers and hung also with its dull, dark blue capsules it is extremely pretty. Later the mountain people collect its roots to use in medicinal ways, as well as its other parts for making domestic dyes. Unless most carefully dried the leaves persistently turn to black.

B. megacarpa, while possessing the same characteristics of having yellow flowers and three-foliate leaves as *Baptisia tinctoria*, is a very different individual and is mostly confined to Florida and Georgia.

Its oval, or elliptical leaflets are often an inch and a half broad and remain unchanged in colour in drying. They are, moreover, thin, glaucous underneath, and slightly pubescent. When hung with its numerous capsules the plant is very attractive for they are large, yellowish green and much inflated. At their bases they show the persistent calyx.

B. perfoliata (Plate LXXX) is a very different looking member of the genus than those others which have gone before; and confines itself mostly to the sandy district between Georgia and South Carolina. Its simple, perfoliate leaves covered with a bloom, clasp about the stem so closely that they appear almost rounded in outline, and are entire and very thick. From their axils is borne a solitary, yellow flower. It is raised on a peduncle, while the small ovate capsule is lined with deep, lemon-yellow

LUPINE.

Lupinus villosus.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Pea.</i>	<i>Red and purple.</i>	<i>Scentless.</i>	<i>Florida to North Carolina.</i>	<i>April.</i> <i>Fruit: July.</i>

Flowers: growing closely in erect, terminal racemes. *Calyx*: two-lipped, five-toothed, covered with silky hairs. *Corolla*: papilionaceous; standard ovate, the margins reflexed; keel, incurved. *Stamens*: monodelphous. *Style*: enwrapped in silky hairs at its base. *Pods*: flattened, projecting the style and covered with a silky wool. *Leaves*: simple, with long silky petioles and linear stipules, long, oblong, pointed and tipped with the midrib at the apex and rounded at the base, ciliate and covered on both sides with silky hairs. *Stem*: one to two feet long, ascending or prostrate.

Most charming and brilliant plants are the lupines and seem to have shown a high sort of intelligence as over sandy barrens they form a sea of

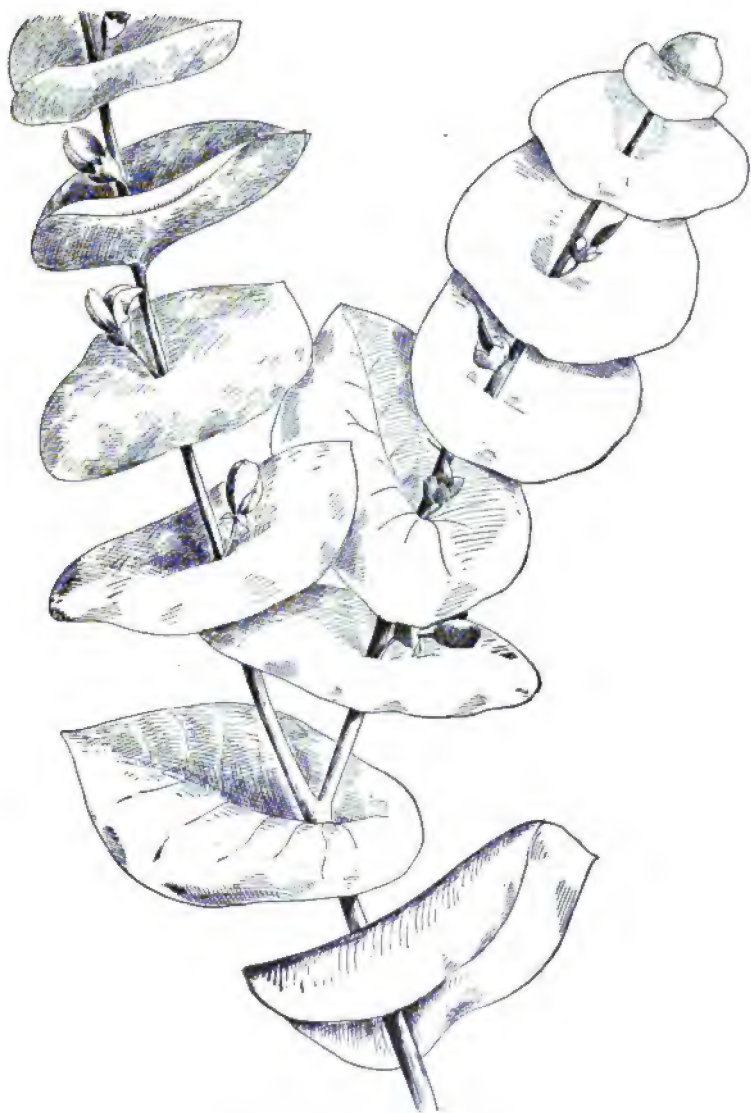


PLATE LXXX. *Baptisia perfoliata*.
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intense changing colours, fairly startling in effect to those who see them growing for the first time. Of this gay species the vexillum, or banner petal is a pale red, while lurking at its base is a deep purple spot. The thick, silky wool which enwraps most parts of the plant gives it, moreover, somewhat the look of being clothed as are animals with a fur coat, and most prominent this feature becomes when the capsules have usurped the place of the flowers.

The generic name from *Lupus*, a wolf, was originally bestowed because the prolific growth of the plants was thought to exhaust and devour the soil. As a matter of fact, however, they seem to be especially designed to transform barren waste country into acres of luxuriant beauty. Many of them have the peculiarity of turning to face the sun and are called "sun dials."

L. diffusus, a smaller species, often found growing with the preceding, bears in contrast a beautiful raceme of blue flowers, the vexillum of which is spotted with purple. The leaves also are simple and obovate and covered thickly with a silky pubescence. Often quite an inch long are the seed pods and as well are covered with a shaggy coat.

The many northeastern and western species of lupines differ mostly from these two of the south in having their leaves digitately-divided.

LOTUS. BIRD'S-FOOT TREFOIL.

Lotus Helleri.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Pea.</i>	<i>Rose and yellow.</i>	<i>Scentless.</i>	<i>North Carolina.</i>	<i>September.</i>

Flowers: small; solitary at the ends of slender, axillary peduncles or terminating short, leafy branchlets. *Calyx*: persistent, with five slender pointed lobes. *Corolla*: papilionaceous, the rose-pink standard equalling in length the yellowish wings and keel. *Stamens*: diadelphous, nine and one. *Legumes*: linear, smooth, enclosing many seeds. *Leaves*: sessile; three-foliate, the leaflets very small, linear-oblong, or linear; entire; mostly glabrous. *Stem*: erect; divaricately branched; leafy at least when young.

When on a trip through North Carolina in search of rare plants, this one was collected by Mr. Heller, and afterwards named in his honour. Before this time it had been confused with *Lotus Americana*, the prairie bird's foot trefoil, and a species not found east of the Mississippi.

SAMSON'S SNAKEROOT.

Psoralea pedunculata.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Pea.</i>	<i>Purplish.</i>	<i>Scentless.</i>	<i>Texas and Florida to North Carolina westward to Kansas.</i>	<i>March-July.</i>

Flowers: growing rather loosely in terminal and axillary racemes. *Calyx*: villous. *Standard*: ovate, or rounded and raised on a claw. *Wings*: oblong.

Keel: incurved. *Stamens*: ten. *Legumes*: nearly round. *Leaves*: with slender petioles and narrow pointed stipules; three-foliolate; the leaflets oblong-lanceolate, mostly bluntly pointed at the apex and rounded at the base; entire and covered with small rather inconspicuous glandular dots. *Stems*: one foot to eighteen inches high; erect; branched, slightly pubescent.

Although the common name of this rather unattractive plant seems undoubtedly to be Samson's snakeroot, it is the one which the mountaineers of the south reserve exclusively for the blue gentian; a plant especially well known to them for the purpose of making a powerful and invigorating tonic, which next to whiskey, coffee and tobacco holds a strong place in their affections. Indeed it is in itself a study of much interest to compare and trace to their origin the common names of many American plants. The greater number of them perhaps have been adapted from Indian appellations, while also many have been appropriately bestowed by the people.

P. Ondrychis, sainfoin psoralea, appears very different from Samson's snakeroot as its leaflets are broadly ovate with long tapering apices. Its long, slender raceme also is more closely packed with small purplish flowers, and seldom comes into bloom before June.

LEAD PLANT. MOUNTAIN FALSE INDIGO. (Plate LXXXI.)

Amorpha virgata.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Pea.	Purple.	Scentless.	Georgia to North Carolina.	May, June. Fruit: August, September.

Flowers: growing in dense, terminal or lateral, spike-like racemes. *Calyx*: persistent; small; with five minute teeth; hairy. *Standard*: embracing the stamens and style. Wings and keel none. *Stamens*: ten, monadelphous at the base; exserted. *Legume*: straight on the back, tipped with a remnant of the style; one-seeded. *Leaves*: compound; odd-pinnate with from seven to nineteen ovate leaflets, obtuse at the apex, entire, glabrous, darker above than below. A shrub, three to eight feet high; erect, branching.

An old superstition exists among the country people that wherever *Amorpha* grows lead is to be found. No doubt at some time this substance was discovered in its vicinity, and so the idea may have originated. Of itself, however, the lead plant would attract many an eye, for it is very unusual looking, and pretty. The bloom when young shows innumerable protruding anthers, which give it a fluffy, bright appearance and much enliven its more sombre tone of purple. The foliage is then a pale grass-green. This, however, as it grows old becomes dimmed and finally turns to rich shades of purple and maroon. Another quaint little characteristic there is about the foliage of the *Amorphas*. Each leaflet is glandular-punctate, somewhat as though it had been done with a needle. Of this peculiarity collectors are well aware and the first thing they do when a leaf excites their suspicion is to hold it up to the light.



PLATE LXXXI. LEAD PLANT. *Amorpha virgata*.
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Should no little holes then let through the sunshine they would seek to place it somewhere else in the great pea family.

A. fruticosa, bastard, or false indigo, grows as a shrub to often the height of twenty feet. For one place it thrives along the shores of the St. John's river in Florida where its wand-like racemes of purple flowers produce an unusual effect among the gayer colours of other plants. Its pods which are curved on the back bear mostly two seeds and on the outside are covered with small, blister-like dots.

A. herbacea has an individual look from the silvery grey tomentum which covers its stems, petioles and the under side of its leaves. Its leaflets also are smaller and of a more yellow-green than those of its mentioned relatives. Again its numerous and slender racemes of bloom do not send out a purple glow, for the small banner petal is pale blue or white, and much shadowed by the leaden down on the calyx.

GATTINGER'S PRAIRIE CLOVER. (Plate LXXXII.)

Petalostemon Gattingeri.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Pra.</i>	<i>Pinkish purple.</i>	<i>Scentless.</i>	<i>Tennessee.</i>	<i>August.</i>

Flowers : small ; growing closely in a terminal, pyramidal and bracted spike. *Calyx* : with five almost equal teeth, and covered with a silvery grey pubescence. *Corolla* : of five petals, each projected by thread-like long claws. *Stamens* : five, protruding. *Leaves* : compound ; odd-pinnate, the leaflets with very short petiolules ; linear, bluntly-pointed at both ends ; entire ; bright green ; glabrous and dotted with glands. A leafy herb with smooth stems branching from the base.

Hardly a more charming plant crops up as our path leads us over dry soil in central Tennessee than this very prairie clover. And yet it is one with which few are familiar. It is most interesting to notice that the lower flowers of its spike are fully blown some time in advance of the top-most ones which still lie hidden within their calyxes of silvery-grey sheen.

PRAIRIE-CLOVER

Kuhnistera pinnata.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Pra.</i>	<i>White.</i>	<i>Scentless.</i>	<i>Florida to North Carolina and westward.</i>	<i>September, October.</i>

Flower-heads : rounded ; growing in abundant, terminal corymbs surrounded by an involucre of imbricated, oval and reddish, ciliate bracts. *Calyx-teeth* : setaceous, plumose. *Petals* : almost regular, borne on filiform claws. *Stamens* : five united into a tube. *Leaves* : compound ; odd-pinnate, the mostly three to seven leaflets needle-shaped and usually less than a half of an inch long. *Stem* : about two feet high, erect, bright reddish brown at the base, smooth, leafy, at least when young.



PLATE LXXXII. PRAIRIE CLOVER. *Petalostemon Gatlingeri*.
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PLATE LXXXIII. AMERICAN WISTARIA. *Kraunhia frutescens*.

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On a first glance at this plant there is little indeed to make one realise that it is a member of the pea family. Its many flowers grouped in heads with conspicuous involucre, remind us more strongly of the great and varied army of composites. But on dissecting one of the small blossoms it will be found that nowhere else than just where it is could it be relegated with a good conscience. It grows through sandy, dry barrens and is very pretty.

LOOSELY-FLOWERED GOAT'S RUE.

Crdca spicata.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Pea.	Purplish.	Scentless.	Mississippi to Florida and Delaware.	June-August.

Flowers: growing on short, terminal and lateral loosely-flowered peduncles. *Calyx:* with five unequal, pointed and silky lobes. *Corolla:* papilionaceous, the petals clawed. *Pods:* flat; narrow; on short peduncles; finely pubescent. *Leaves:* compound with small, pointed and densely pubescent stipules; odd-pinnate with from nine to fifteen oval, or obovate leaflets with very short, hairy petioles, rounded at the base, the apex terminating in a bristle-tip; entire; glabrous above at maturity and closely covered underneath with short hairs. *Stem:* decumbent; one to two feet long; branched and covered with long, brownish hairs.

Something the look of a wild hairy pea has this goat's rue, and even so it cannot be claimed to be very pretty. The genus flourishes most luxuriously in tropical climates and the best grown and most attractive examples that I have seen of this particular species were in a strip of pine woods near Jacksonville, Florida. At night the leaflets turn on their bases, and go to sleep.

C. Virginiana, goat's rue, cat-gut, or hoary pea, has a range extending from Florida to New England and westward to northern Mexico and Minnesota and is a much more pleasing individual than the preceding species, as its bright yellow and purple pea-shaped flowers are produced abundantly in terminal racemes. Its leafage is slender and a silvery glow is cast over the plant by the greyish tomentum which is apparent on nearly all its parts.

AMERICAN WISTARIA. KIDNEY BEAN TREE.

(Plate LXXXIII.)

Krauhnha frutescens.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Pea.	Pale purple.	Fragrant.	Florida and Virginia and westward.	April-June.

Flowers: growing closely on pubescent pedicels in large, terminal racemes. *Calyx:* companulate; two-lipped or with five unequal teeth; purplish and covered with a fine silvery pubescence. *Corolla:* papilionaceous; the standard

clawed, broad, reflexed and emarginate at the apex. *Wings* : oblong. *Keel* : incurved. *Stamens* : diadelphous, nine and one. *Pod* : linear, tomentose. *Leaves* : compound with long petioles enlarged at their bases ; odd-pinnate, with from nine to fifteen oblong, or lanceolate leaflets, bluntly pointed at the apex and mostly rounded at the base ; entire ; usually slightly covered underneath as are the petiolules with silky pubescence. A woody vine becoming forty or fifty feet long.

As this, one of the most beautiful of our native vines, is seen climbing over high trees and other forms of growth, it transforms truly the low grounds and swamps into bowers of fragrant loveliness ; and on some warm day in April when there is a feverish desire to blossom among the little plants, it overhangs them in masses and supplants all their efforts to be gay, while also attracting to itself many more than its share of humble bee lovers. All about their ceaseless hum is heard as they alight now here, now there among the flowers. When a little petted and coaxed in cultivation the wistaria's bunches of flowers greatly increase in size and beauty over those of the wild ones. In Japan similar vines are much regarded for decorative effects and the purple one as may seem strange to us is exalted in rank high above the white variety.

LOCUST TREE. YELLOW OR BLACK LOCUST. FALSE ACACIA.

Robinia Pseudacacia.

FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
Pea.	Crown, narrow : branches, erect.	40-50 or 90 feet.	Georgia northward.	May, June.

Bark : reddish brown ; rough and broken in ridges. *Stipules* : linear and later often developing into spines. *Leaves* : compound, with leaf-stalks hollowed at their bases and covering the buds of the succeeding year ; odd-pinnate with from eleven to twenty-five oval leaflets, rounded at both ends and occasionally tipped with the midrib ; entire ; netted-veined ; glabrous, or when unfolding sometimes sprinkled with a silvery pubescence. *Flowers* : white ; fragrant ; growing in loose, axillary racemes. *Calyx* : five-toothed. *Corolla* : showy ; papilionaceous, the standard spotted with yellow at the base. *Legumes* : linear ; glabrous and containing from four to seven seeds.

Even those with an obscure sense of beauty must find something almost intoxicating in the calm, early summer air heavy with the scent of this tree's milk-white blossoms ; and in its graceful form which shows so high a type of beauty among our deciduous-leaved trees. Long ago it was foretold that it would eventually become more common in Europe than in its native land. And this is now possibly true, for in Europe it is well naturalized. In northeastern America although also at home and very general it is so preyed on by insects that it is almost impossible to protect it from their ravages. In few places, even in the primeval forest, is its timber free from their destruction. And in such places where abundantly it thrives on the



PLATE LXXXIV. VIEW FROM THE PATH UP GRANDFATHER MOUNTAIN.

Part way up the rocky path that leads to the top of Grandfather Mountain we turned to face the outlying country, a narrow strip of which could be seen through the space between a locust and a buckeye tree. The valley at our feet was deep and appeared to rise until lost in the opposite mountains, spread out as though to form the semi-circle of an amphitheatre made for the greater scenes of worlds. An intense sun shone, as warm as it had been in mid-summer ; slowly the clouds glided along ; the smoke from a saw-mill arose ; while, against each other's sides, lay dark and grotesque the shadows of neighbouring mountains. Here grew the silver fir and the black spruce, and on the flat rocks the sand myrtle formed green mats more thick than those about the rhododendrons on Roan's summit.

(LXXXIV).

mountain slopes, the natives secure its stems to construct their log cabins as its wood resists decay almost longer than any other. Pins and tree nails largely are made of it and it is greatly valued in ship-building. Its unusual strength caused it to appeal strongly to the Indians for the making of their bows.

BOYNTON'S ROBINIA. (Plate LXXXV.)

Robinia Boyntoni.

FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
Pea.	Irregular.	8-15 feet.	High mountains of North Carolina.	May, June.

Flowers : showy ; purplish pink ; slightly if at all fragrant ; growing on short pubescent pedicels in long axillary racemes. *Corolla* : papilionaceous, the standard rounded and notched at the apex, the lateral lobes being narrow. *Keel* : enclosing the stamens. *Stamens* : ten ; diadelphous. *Pistil* : one ; style, pubescent. *Leaves* : compound ; odd-pinnate having from nine to fifteen leaflets, with short pubescent petiolules ; ovate or oval, pointed or rounded at the apex and rounded at the base, the midrib projecting a bristle ; entire ; thin ; glabrous at least in age. A shrub or small tree.

In some primitive corner of the forest near Highlands, North Carolina, this comparatively new species of Robinia was found by Mr. Boynton of Baltimore and is named in his honour. Although it is not a great tree like the locust, Robinia pseudacacia, it displays in its manner of growth some of the same characteristics, while its flowers approach most closely to those of the rose acacia, Robinia hispida, and yet are without their most prominent trait, innumerable stiff hairs. It therefore holds a place quite its own and is indeed a charming individual.

R. viscosa, clammy locust, may be found either as a small slender tree, or as a shrub. Its flowers a delicate rose colour embower it with loveliness although they are without much fragrance. The clamminess of the branchlets and leaf-stalks, however, is the mark by which the species may best be known. In the high mountains through its range, especially those of North Carolina, it is abundant while elsewhere it is not common.

R. hispida, rose acacia, or bristly locust, is really the moss locust, holding among the acacias the same place as the moss rose does among roses. The calyxes of its pink blossoms, petioles, and midribs of the leaves as well as almost every available part of the plant, are covered with bristles purplish, or hazy in colour and which give it an extremely odd and unusual look. It is a branching, exquisite shrub and traverses the mountains from Georgia to Virginia. In English gardens sometimes it is cultivated as a wall tree where it finds the warmth and protection from high winds it requires to attain its greatest beauty. Occasionally we hear it erroneously called the Rose of Sharon.



PLATE LXXXV. BOYNTON'S ROBINIA. *Robinia Boyltoni*.
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CAROLINA MILK VETCH.

Astragalus Carolinianus.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Pea.</i>	<i>Greenish yellow.</i>	<i>Scentless.</i>	<i>Louisiana and Georgia northward.</i>	<i>July, August.</i>

Flowers : growing densely in long peduncled, axillary spikes. *Calyx*: tubular, with fine, slender, pointed teeth. *Corolla*: papilionaceous, the standard slightly erect and clawed as the other petals. *Stamens* : diadelphous, nine and one. *Legumes* : erect; inflated, tipped with a point and containing numerous seeds; thick; glabrous. *Leaves* : with petioles and lanceolate, membranous stipules; odd-pinnate with numerous long oval, or elliptical leaflets, entire, thin. *Stem*: erect, often ascending; branched; leafy.

Along streams the dark green foliage of the Carolina milk vetch appears often vigorous and handsome, but the bloom although interesting is not over prone to catch the eye. As well as greenish yellow it sometimes occurs white and tinged with purple.

A. Tennesseeensis, Tennessee milk vetch, from that state to Missouri, bears its flowers in short, thick racemes and is further known by its abundance of villous hairs. The pods moreover are pubescent, wrinkled and much curved at the apex.

POINTED-LEAVED TICK-TREFOIL. (Plate LXXXVI.)

Meibomia grandiflora.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Pea.</i>	<i>Purple.</i>	<i>Scentless.</i>	<i>Florida to Quebec.</i>	<i>June-September.</i>

Flowers : growing in a long, terminal panicle the peduncle of which arises from the summit of the stem where the leaves are crowded. *Calyx-tube* : short, the five teeth connected so as to form two lips. *Corolla* : papilionaceous. *Legumes* : jointed twice or thrice, not constricted above. *Leaves* : growing in a cluster at the summit of the stem and having small stipules; three-foliate; the leaflets broadly ovate, pointed at the apex and squared or rounded at the base; entire; glabrous or somewhat pubescent on both sides; the terminal leaflet considerably larger than the other two. *Stems*: erect.

It seems to be the natural tendency of some plants to diffuse themselves over as much of the earth's surface as possible; and in attaining this desideratum there is probably no cleverer family than the Meibomias. In fact their various, and often unscrupulous ways of aggrandizing themselves has been commented upon most freely. They use the instrument nearest at hand, so waste no time in discrimination. Their loment, or jointed pods are roughened on their surfaces and cling with tenacity to almost anything which will carry them free of expense to a good distance. As an illustration of their ways I noticed at Wolf-Creek, Tennessee, that there came down to meet the train what might have been imagined to be a mottled

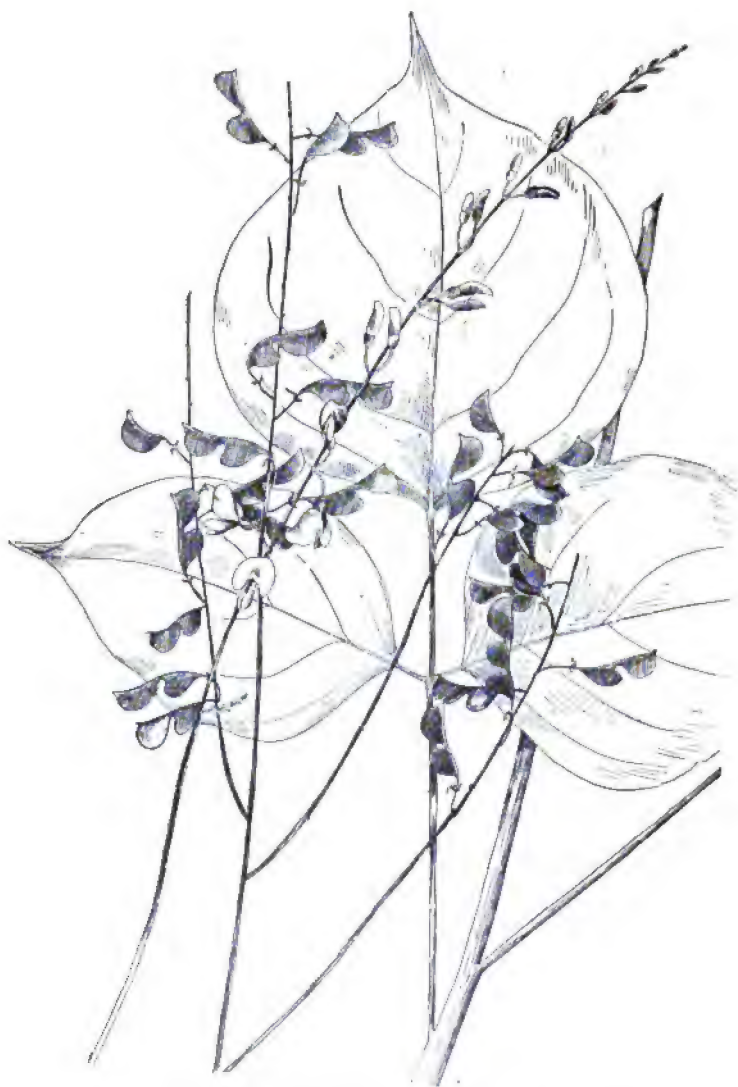


PLATE LXXXVI. POINTED-LEAVED TICK-TREFOIL. *Meibomia grandiflora*.
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black and yellow dog. So completely, however, was his back and legs covered with the meibomia's seeds that he looked to be a vegetable dog. The poor creature, never the Vere de Vere type, was thus made fairly ridiculous, but as he rolled himself over and over again in the grass to shake them off, he performed very well the act of sowing the seed.

The genus is a large one including many species, but a lack of space forbids entering many of them here. Nearly all are serviceable in making domestic dyes.

M. nudiflora, naked-flowered tick-trefoil, is known by its rather small flowers growing in a terminal panicle borne on a long, naked peduncle which arises from the base of the plant. Its leaves at the summit of a separate stem are composed of broadly oval, or ovate leaflets, glabrous or slightly pubescent on both sides. The legumes are not constricted above.

PROSTRATE TICK-TREFOIL.

Meibomia Michauxii.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Pea.	Purple.	Scentless.	Florida and Louisiana northward.	July-September.

Flowers: growing in loose terminal and axillary panicles. *Calyx*: five-cleft, the lobes ciliate. *Corolla*: papilionaceous. *Legume*: three to five jointed, both margins constricted. *Leaves*: three-foliolate with ovate stipules, the leaflets rounded, pubescent. *Stem*: prostrate; pubescent or villous.

The peculiarity most noticeable about this meibomia and the one which follows is that they trail along the ground, often covering good sized areas with mats of green, or brightened here and there by panicles of purple flowers. Their leaves are greedily eaten by cattle, and it is possible that the species possess valuable qualities as forage plants.

M. arenicola, sand tick-trefoil, grows from Florida not further northward than Maryland and is an attractive, trailing species which bears its flowers in long, terminal and axillary racemes. Its small leaflets are rounded and thick, and along both margins the loment is constricted.

M. stricta, stiff tick-trefoil, a species of the pine barrens, extending from Florida and Alabama to New Jersey, belongs to the group of meibomias which grow with upright stems. Its flowers are rather sparingly borne in panicles with spreading branches and the leaflets are narrowly linear, strongly reticulated, thick and rather blunt at the apex. From one to three times the loment is jointed and concave along its back.

M. canescens, hoary tick-trefoil, also belonging to the group of upright growers, may further be known by its unusually large ovate and yellowish green leaflets, acute or obtuse at their apices. As are the stems and petioles they are noticeably covered with a rough pubescence. The flowers are pretty, quite large and develop loment with from three to six joints.

M. laevigata, smooth tick-trefoil, may be distinguished from the preceding species by its smaller leaflets, smooth on both sides and glaucous underneath. Its panicle also has not very widely diffused branches.

TRAILING BUSH-CLOVER.

Lespedeza procumbens.

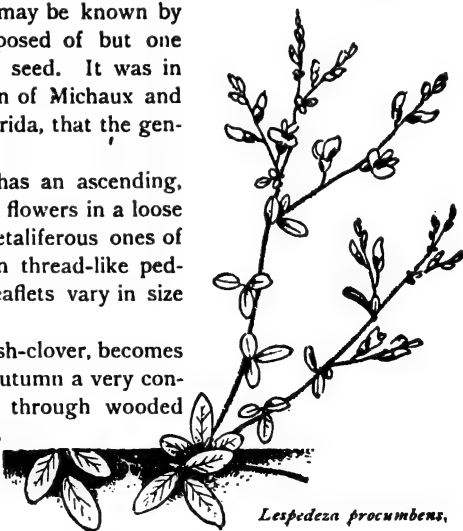
FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Pea.	Purplish pink or violet purple.	Scentless.	Florida to Massachusetts and westward.	August, September.

Petaliferous flowers: growing in clusters on pubescent peduncles which are longer than the leaves. *Calyx*: with nearly equal lobes. *Corolla*: papilionaceous, the banner petal obovate, clawed, pointed at the apex. *Stamens*: nine and one, diadelphous. *Apetalous flowers*: small, intermingled or in sessile little clusters along the branches. *Pods*: flat, pubescent and bearing one seed. *Leaves*: with short petioles and small stipules, three-foliate, the leaflets small oval, or elliptical, blunt at the apex and mostly rounded at the base; entire; pubescent underneath. *Stem*: long; procumbent with ascending branches; woolly or soft downy.

While the trailing bush clover has a look very like some of the meibomia tribe there are others of the genus, the wandlike one, for instance, which have an altogether different and individual personality, and by no means are they all beautiful. A peculiar trait of the genus is that it bears two sorts of flowers along the branches; the showy ones with petals which are perfect but seldom, if ever, fruitful, and others without petals, looking insignificant but which are very useful, being extremely fertile. Again from the meibomias these plants may be known by their pods, they being composed of but one joint, and containing a single seed. It was in honour of Lespedez, a patron of Michaux and at one time Governor of Florida, that the generic name was bestowed.

L. violacea, bush-clover, has an ascending, branched stem and bears its flowers in a loose paniced inflorescence, the petaliferous ones of which are small and grow on thread-like pedicels. Its oval or obovate leaflets vary in size greatly.

L. frutescens, wandlike bush-clover, becomes in the late summer, or early autumn a very conspicuous plant, as it raises through wooded places its long, full clusters of pinkish and almost sessile



Lespedeza procumbens.

bloom. Very closely herein do both sorts of flowers grow and the inflorescence has therefore an uneven rather unkempt look. The leaflets are very abundant and nearly glabrous.

L. capitata, round-headed bush-clover, a tall, weedy-looking individual, is rather unusual in that it bears but one sort of flower which is complete. In rounded or oblong heads, growing on pubescent peduncles or sessile from the upper axils, a number of them are grouped together and as their corolla is yellow with a purple spot at the base of the standard, the plant could not well be confused with any of the preceding species. The three-foliate leaves are nearly sessile, the leaflets oblong or orbicular and covered with silky white hairs, at least on the lower side.

Chapmannia Floridana.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Pea.</i>	<i>Yellow.</i>	<i>Scentless.</i>	<i>Middle Florida.</i>	<i>April-August.</i>

Flowers: of two sorts growing in terminal racemes. *Calyx:* of the sterile ones unequally five cleft, the lowest tooth longest and remote from the others. *Corolla:* inserted on the throat of the calyx. *Keel:* cleft at the apex. *Stamens:* ten, monodelphous. *Legumes:* one to four jointed, contracted at the joints and covered with soft bristles. *Leaves:* odd-pinnate, with from three to seven oblong or obovate leaflets, pointed or rounded at the apex and mostly tapering at the base; entire; hairy below at least when young. *Stems:* slender; two to three feet high, viscid and hirsute.

This leafy and much branched little plant which early in the morning blooms through the dry pine barrens of middle Florida, produces as the bush-clovers two sorts of flowers in its inflorescence. The sterile ones, while their petals last, are quite showy, but the other ones are plain and have neither petals nor stamens. They are simply abundantly fertile. The plant, the only one of its genus, commemorates Dr. Chapman whose love and work among the southern flora and his many excellent deeds have caused it to be written of him: "The passing of Dr. Chapman is to this community like the fall of a mighty oak which leaves the landscape desolate."

CAROLINA VETCH.

Vicia Caroliniæna.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Pea.</i>	<i>White.</i>	<i>Scentless.</i>	<i>Georgia and North Carolina and westward.</i>	<i>May-July.</i>

Flowers: small, growing in racemes from the axils of the leaves. *Calyx:* short, five-toothed. *Corolla:* papilionaceous, the standard upright, and the keel tipped with blue. *Pods:* about an inch long, pointed; glabrous. *Leaves:* compound, with very short stalks and having a pair of small stipules at their bases, pinnate, terminating in a tendril, the leaflets small, eight to eighteen, oblong, or linear-oblong, rounded at the base; entire. A slender vine trailing or climbing by means of leaf-tendrils.

Commonly in summer we come across the vetches, always either trailing or climbing by means of their long, strong tendrils. This particular one grows abundantly in open woods in the mountains and on cliffs, or rocks along the river's shore.

V. sativa, common vetch or tare, is seen occasionally through our fields and pastures and has come to us from Europe where it is cultivated as fodder for cattle. That many of its obovate leaflets are deeply notched at the apex and that but one or two almost sessile flowers grow in the leaves' axils are marks by which it may be known. Furthermore its corolla is purplish blue.

Erythrina herbacea (Plate LXXXVII.)

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Pea.	Scarlet.	Scentless.	Florida to North Carolina and westward.	April, May.

Flowers: showy, produced in long racemes. *Calyx*: tubular, the teeth undeveloped. *Vexillum*: very long, lanceolate, folded lengthwise. *Wings and keel*: small. *Stamens*: somewhat exerted. *Pods*: long, curved, contracted at intervals and containing bright scarlet, lustrous seeds. *Leaves*: borne on long smooth petioles which bear one, or a few small recurved prickles; three-foliate, the leaflets long pointed, broadly ovate or hastate, are petiolate, entire, glabrous or nearly so. *Stems*: two to four feet high or more, prickly, several arising from a large thick root.

Only those that have seen this curious plant can fully appreciate how fantastic are its flowers, how strangely shaped its leaves and how beautiful its pod's scarlet seeds. Among all other growing things it enchains us and we pause longer than our wont to marvel at nature's great floral pageant wherein no detail is lost, nothing is insignificant. What a surprise lurks in this very colouring of the *Erythrina* seeds! Released from their pods they are as startling as Mephistopheles throwing off the shade of night. As they fall on light sandy soil, we pick them up, little dreaming perhaps that under their lustrous, smooth surface is hidden the miniature plant of the next season.

BUTTERFLY PEA.

Clintòria Mariàna.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Pea.	Pale lavender.	Fragrant.	Florida to North Jersey and westward.	May-August.

Flowers: large; showy; solitary or a few borne on a short peduncle. *Calyx*: tubular, expanding at the apex; five-toothed. *Corolla*: papilionaceous, the standard very much larger than the other petals, erect, broadly ovate, notched at the apex. *Stamens*: ten, monodelphous. *Style*: bearded. *Pods*: long; appearing late in the season. *Leaves*: with long smooth petioles and small stipules at their bases; three-foliate, the leaflets also stalked and with stipels, ovate-lanceolate or oblong-lanceolate, bluntly pointed and mucronate at the apex, rounded at the base, entire dark green above, lighter below, glabrous. *Stem*: ascending or twining; smooth.



PLATE LXXXVII. *Erythrina herbacea*.
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In dry soil in many a mountain woods, or even hugging closely a steep hillside, the butterfly pea seems almost too delicate and chaste a blossom to be disputing the soil with hoary mints, aggressive coreopses and the close and interwoven growth of rhododendrons long since past their bloom, but which make up the conglomerate leafage of midsummer. Sometimes, however, it finds a soft patch of ferns to rest against and then has truly a petted and cultivated air. Its large, banner petal of palest lavender hoists from afar a signal to its butterfly lovers and furthermore to please their susceptibilities it exhales a faint and very sweet perfume.

GROUND NUT.

Apios Apios.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Pea.</i>	<i>Dull purple.</i>	<i>Fragrant.</i>	<i>Florida and Louisiana northward.</i>	<i>July-September.</i>

Flowers : growing closely in short, axillary racemes. *Calyx* : campanulate; slightly two-lipped. *Corolla* : papilionaceous; the lateral petals enclosing the stamens and keel. *Stamens* : diadelphous, nine and one. *Style* : slender. *Pods* : linear; slightly curving and containing many seeds. *Leaves* : with slender, slightly pubescent petioles; odd-pinnate with from five to seven ovate, or ovate-lanceolate leaflets, pointed at the apex and mostly rounded at the base; entire; thin; glabrate. A slender, twining vine. *Rootstock* : tuberous; edible.

After the majority of other flowers have vanished this pretty little thing throws out its dense clusters of dull purple flowers, quite velvety within and which are as sweetly fragrant as violets. Their colour is peculiar, but still they are very ornamental and especially so when surrounded by the light green foliage. The stem contains a milky juice and the small pear-like tubers are said to be edible. It may be, however, as Dr. Gray said about the May apple's fruit, that they are eaten by pigs and boys.



THE GERANIUM FAMILY.

Geraniaceæ.

Herbs with forked stems, alternate, or opposite, palmately-lobed leaves and regular, perfect flowers growing axillary and solitary, or in clusters.

WILD GERANIUM. SPOTTED CRANE'S BILL.

Geranium maculatum.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Geranium.</i>	<i>Purplish pink.</i>	<i>Scentless.</i>	<i>Georgia to Missouri and northward.</i>	<i>April-July.</i>

Flowers: solitary, or a few growing in umbellate clusters and borne at the ends of distinct peduncles. *Calyx:* with five, oblong, pointed sepals. *Corolla:* with five, rounded petals. *Stamens:* ten, five of which are longer than the others. *Pistil:* one; styles five. *Leaves:* from the base and two from the stem, with long, rather rough petioles, palmately divided into three to seven segments, the divisions notched and acutely lobed at their apices, rather rough above, the under surface with white hairs along the veins. *Stem:* forked at the summit; one to two feet high; hairy. *Rootstocks:* thick.

Often in places thick with green we find in early spring the wild geranium putting forth its delicately tinted bloom. Not far away perhaps the marsh marigold gleams vividly gold by the brook's side, or through the fields a mass of wild horse radish flowers are blowing, and still it lingers until the wild orchids of its neighbourhood have had their day. As its leaves grow old they turn to yellow, or become blotched and spotted with white, which peculiarity in connection with the long crane-like beak of its young carpels is the significance of one of its English names. Country people also call it alum root in reference to that part's bitter flavour.

G. Carolinidnum, Carolina crane's bill, differs from its relative in that it is an annual and grows in fields and abundantly in abandoned waste places. Its pubescence also is more strongly marked and the segments of its smaller leaves are more bluntly lobed. Two pale purple flowers grow from the ends of the peduncles, their petals only about equalling in length the sepals.



THE WOOD-SORREL FAMILY.

Oxalidaceæ.

Annual, biennial or perennial herbs with sour juice and either acaulous, or leafy stems arising from bulbs or scaly or fibrous rootstocks. Leaves: three-foliate in our species, the leaflets being mostly obcordate. Flowers: perfect; solitary, or growing in cymes, the petals either white, yellow, pink or purple,

GREAT YELLOW WOOD-SORREL. (Plate LXXXVIII.)

Oxalis grandis.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Wood-sorrel.	Yellow.	Scentless.	North Carolina and Tennessee northward.	May-August.

Flowers: growing in terminal, erect cymes with thread-like pedicels bracted at their bases. *Calyx*: with five, oblong, often ciliate sepals. *Petals*: five, long; squared or rounded at their apices. *Stamens*: ten, five being long and five short, monodelphous at the base. *Styles*: five, hairy. *Leaves*: with long, pubescent petioles, the three leaflets broadly obcordate, somewhat unequal in size, sparingly ciliate; bright green and lustrous; thin. *Stem*: one to four feet high; leafy; rigid; pubescent.

In the hollows of bare and often unsympathetic looking places along the river's banks, this great one of the *Oxalis* tribe forms often thick and rounded clumps of its clover-like leaves, and throws out its cheery-countenanced little blossoms. They always seem fresh and wide awake, perhaps because in accordance with the old maxim they so early in the evening fold their leaflets together and then unfold them with the very first gleam of morning sun. Included in the genus are fully two hundred and fifty species, of which the greater number are partial to a warm, tropical climate.

O. stricta, lady's sorrel, or upright yellow wood-sorrel, an erect and branching species, puts out an abundance of pale, bluish green leaflets so sensitive to the touch that they close even when handled but slightly. Its fragrant, yellow flowers, tinted with red at their petals' bases, are rather small and grow in terminal, umbel-like cymes.

O. recurva, large-flowered wood-sorrel, which by some was thought to be the same as *Oxalis stricta*, is now recognised as a distinct, delicate species, —one described long ago by Stephen Elliott. It bears yellow flowers; the stems and pedicels are villous; while by the erect, or spreading capsules are distinctly projected the five styles.

O. cymosa, tall yellow-sorrel, would probably always be known as a wood-sorrel by its large, obcordate leaflets. Sometimes it grows, however, to the astonishing height of four feet. But slightly hairy are its stems and pedicels while its yellow flowers are very small and borne in branching cymes.

O. violacea, violet wood-sorrel, one of the dearest of the deep wood's plants, sends up its leaves and flowering scapes from a pinkish bulb, and produces flowers that are either violet, or white, tinted with violet. Only rarely, however, are they pure white. It grows usually from eight to ten inches and is rather chary of its foliage which throughout is glabrous. Often as late as November, when the days are warm, it comes again into full bloom. The scapes of this species bear several flowers.



PLATE LXXXVIII. GREAT YELLOW WOOD-SORREL. *Oxalis grandis*.
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O. Acetosilla, white wood-sorrel, is one of the family with which, on account of its many common names and frequent reference by authors, we are all perhaps familiar. In some places even it is known by the delightful name of "Alleluia." Its delicate, campanulate, white or more often pink flowers with their purple or magenta veinings are borne singly on scapes that arise from a scaly, creeping rootstock and lift them slightly above the leaves. Of these latter the leaflets are large and beautifully shaped, while the stems show a covering of purplish hairs. Often among them one is seen turning to a solid reddish purple. Through Tennessee the plant is only found on the tops of the Big Smokies while on the upper slopes of the Craggies in North Carolina it grows mostly under the shade of the Rhododendrons. That it is well beloved is shown by its numerous and often amusing appellations: "Cuckoo's meat" and "shamrock" being among the most general. In England it is called the shamrock, although not at all supposed to be the original one of Saint Patrick. For chemists it yields "salts of lemons." Besides having the characters above, the plant bears, as do many violets, cleistogamous flowers at its base; those insignificant ones which make no great showing and yet carry on their shoulders much of the responsibility of continuing their race.



THE FLAX FAMILY.

Linàceæ.

Mostly herbs with simple, opposite, or alternate, entire leaves and perfect, regular flowers which grow in racemes, cymes, or panicles; their parts being in divisions of fours, or fives and their filaments monodelphous at the bases.

FLORIDA YELLOW FLAX.

Linum Floridànum.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Flax.</i>	<i>Yellow.</i>	<i>Scentless.</i>	<i>Florida to Louisiana northward.</i>	<i>June-August.</i>

Flowers: small; growing in a much-branched corymbose inflorescence. *Calyx*: persistent with five pointed sepals. *Petals*: five *Stamens*: five. *Styles*: five. *Capsule*: ovoid-ovate. *Seeds*: oily. *Leaves*: small, appressed, one-half to one inch long, the uppermost alternate; linear or linear-lanceolate, pointed at the apex and sessile at the base; smooth. *Stem*: erect, slender, smooth.

This pretty native flax with its slender, leafy stem and gay little flowers, reminds us somewhat of an exquisitely tufted grass. In the far south it

grows in low pine barrens where we cannot but associate with it a little of the fame of its old world relative. For from almost time immemorial members of the genus have been cultivated for their fine fibre and oil. No one indeed can name a date so distant as when *Linum usitatissimum* was introduced into Egypt. The linen made from it was one of the features of luxury and also a great source of wealth. Priests in the temple wore it instead of woollens because it was more distasteful to vermin. One of Isaiah's strong denunciations, it will be remembered, was that "the Egyptian workers of fine flax should be confounded."

L. Virginidnum, wild flax, or slender yellow flax, occurs from Florida northward along shaded waysides, or in many wet places. It also bears yellow flowers, rather small and which grow in leafy, corymbose panicles. A good deal branched is the stem near its summit and when many small capsules are scattered among the lanceolate and bright green spreading leaves it has more than ever the appearance of an open, seedy grass.



THE CALTROP FAMILY.

Zygophyllaceæ.

A family including tropical trees with notably hard wood, and shrubs and herbs with mostly opposite, pinnate, or two to three foliate, stipulate leaves and regular, perfect flowers which have their stamens inserted on the receptacle.

LIGNUM-VITÆ TREE. (Plate LXXXIX.)

Guaiacum sanctum.

FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
<i>Caltrop.</i>	<i>Crown rounded; branches drooping.</i>	<i>20-30 feet.</i>	<i>Keys of Florida.</i>	<i>April.</i>

Bark: grey, almost white, separating into small scales. *Branches*: forked, swollen at the nodes, pubescent when young. *Leaves*: with broadly acuminate, pointed stipules; abruptly pinnate with from six to ten pairs of obliquely oblong, sessile leaflets, entire, pubescent when young and becoming at maturity glabrous and lustrous on both sides; thick, lasting over the winter. *Flowers*: blue; solitary or usually a few together, growing on pubescent peduncles at the end of the branches and from the axils of the uppermost leaves. *Calyx*: with five deciduous sepals, their divisions unequal and slightly pubescent on the outer surface. *Petals*: five, obovate. *Stamens*: ten; filaments, naked. *Fruit*: obovate; orange-colour; the valves somewhat fleshy.

It seems as though the very air had turned to azure of an intenseness almost felt when this small tree takes advantage of the warm, hazy air of

early spring to cover itself with blue blossoms. Even those that are under its skeleton screen of unfolding leaves have a way of peeping out in unexpected places and thus adding to the strangeness of seeing flowers of their hue so abundantly spread through a tree's crown. The almost white bark of the tree reminds us a little of that of the white oak as it separates also into small scales. Comparatively few of us know this beautiful individual as belonging to our silva, for its area is very limited and even through its range it is not abundant. For this reason its wood while notably hard and heavy and of similar excellent quality has not the commercial importance of the wood from the Bahama Islands, the source of the *lignum vitæ* of commerce.

An interesting prostrate herb of the Caltrop family is *Tribulus cistoides*, caltrop, which makes its home about waste places at Key West, Florida. Here its large, yellow flowers blow open, and are also seen its small, yellow-green leaflets with their soft, silky white under-coating. In cultivation the plant increases greatly in size and attains considerable beauty.

Kallströmia mxima, greater caltrop, may be mentioned as representing the third genus of this family. At St. Augustine, Florida, for one place, it grows about dooryards, and blossoms in September, or even as early as April. It is a hairy herb and much resembles the preceding plant in habit. Its small flowers also are deep yellow. On a first glance, in fact, if one would exclude the flowers it might suggest some members of the pea family.



THE RUE FAMILY.

Rutacæ.

Trees, shrubs, or herbs with heavy scented, simple, or compound, alternate or opposite leaves and regular, perfect or imperfect flowers, their stamens equalling, or double the number of the petals and inserted on the receptacle.

TOOTHACHE-TREE. SOUTHERN PRICKLY ASH. PEPPER-WOOD. (Plate XC.)

Xanthoxylum Clava-Herculis.

FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
Rue.	Round-headed.	20-45 feet.	Florida to Virginia and westward.	April-June.

Bark: at least of the branches beset with numerous prickles, pungent. *Leaves:* alternate; odd-pinnate with thorny leaf stalks and from five to seventeen ovate, or lanceolate leaflets, long pointed at the apex and rounded or tapering at the base,



PLATE LXXXIX. LIGNUM-VITÆ. *Guaiacum sanctum*.

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PLATE XC. TOOTHACHE-TREE. *Xanthoxylum Clava-Herculis*.
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inequally serrate, or crenate, smooth and emitting when crushed a peculiar scent. *Flowers*: small, greenish white, growing in terminal, compound cymes. *Sepals*: small, four to five. *Petals*: four to five. *Staminate flowers*: with four or five stamens. *Carpels*: ovoid, one-seeded, opening in halves and releasing the black, shiny seeds, which hang outside after maturity.

Sometime after the leaves unfold innumerable little greenish yellow flowers enliven the look of this small tree. They are not at all showy, nor handsome, but then the greater number of trees are rather modest in the matter of their blossoms. Once, however, let an interest be kindled in tree blossoms and the eyes are alert to seek them even when encouraged by a few warm days in February. A curious feature also to be noticed about this particular one is its sharp prickles which are raised by pads, or cushions of cork. It is not common and mostly grows along streams where its ash-like, brilliant foliage makes a busy stirring in the breeze. That it is called toothache-tree is because a piece of its bark when put in the mouth is said to give much relief to this disorder. Negroes, especially, pin their faith to its efficacy.

Belonging to the rue family also, although under another genus, we find the indigenous hop-tree, *Ptelea trifoliata*, which locally passes as well under the names of shrubby trefoil, hop-tree and wafer ash. From Florida, it grows northward, favouring rocky banks and is infinitely more noticeable when hung with its samaras, broadly winged all around, than when its cymes of delicate greenish flowers are in blow. This fruit which is intensely bitter has been occasionally used as a substitute for hops.

Although not the function of this book to include exotic plants, it may not be amiss to here mention that orange and lemon trees are members of this same family.



THE AILANTHUS FAMILY.

Simarubaceæ.

QUASSIA. PARADISE TREE.

Simarûba glauca.

FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
<i>Ailanthus.</i>	<i>Round-headed.</i>	<i>20-50 feet.</i>	<i>Southern Florida.</i>	<i>April.</i>

Bark: appressed, scaly, light reddish brown. *Juice*: bitter and resinous. *Leaves*: alternate; compound; abruptly pinnate with from eight to sixteen opposite, or alternate leaflets, which are oval or oblong, rounded at the apex and tapering at the base; entire, the margins slightly revolute; thick; paler below; smooth. *Flowers*: small; pale yellow; diœcious; regular; growing in open lateral and terminal panicles. *Petals*: five; spreading. *Stigmas*: five. *Drupe*: oval.

At Key West and other parts of southern Florida this graceful tree attracts the attention, and we may here view it as a type of the family to which it belongs. It has perhaps attained its greatest renown among the people through the cups and dippers made from its bitter wood and bark, and from which invalids desire to drink, the reputed benefit being something the same as though they had taken quinine. Again, that its beauty is appreciated by the people seems to be voiced by its common name of Paradise Tree.

Ailanthus glandulosa, Tree-of-Heaven, or Chinese sumac, a large and well-known tree in this country, especially in cultivation, is, however, a native of China. In the autumn the pistillate individuals are most beautiful as they wave great bunches of fresh green or purple tinted samaras which gradually turn to red and finally a dull tan before they fall and madly gambol about in search of a suitable resting place. The pollen from the flowers of the staminate ones is reputed to be very noxious and the tree's sap regarded as poisonous.



THE MAHOGANY FAMILY.

Melidceæ.

MAHOGANY-TREE.

Swietenia mahogoni.

FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
<i>Mahogany.</i>	<i>Spreading.</i>	<i>40-50 feet.</i>	<i>South Florida.</i>	<i>July, August.</i>

Bark: dark reddish brown, broken into broad, thick scales. *Wood*: hard, reddish brown. *Leaves*: alternate, compound, abruptly pinnate with from six to ten, opposite leaflets, which are ovate-lanceolate, unequal at the base, petiolate, entire. *Flowers*: nearly perfect, growing in axillary panicles. *Calyx*: five-cleft. *Petals*: five. *Stamens*: ten, the filaments united into a tube. *Capsule*: very large, ovate, woody and containing many winged seeds.

Another tree which helps to make up the distinctive growth of the Keys of southern Florida is the mahogany; one which few could pass without wonder, especially when hung with its great woody capsules as large as good-sized lemons. It produces moreover the true mahogany wood of commerce, of rich reddish brown, and long valued above most others in cabinet work. In his Natural History of Carolina it was first described by Mark Catesby.

A connection of the mahogany, which many years ago was introduced into this country by the elder Michaux, is the China berry, umbrella tree, or pride-of-India, *Melia azederach*, now so familiar in cultivation about southern

homes. It is a lovely individual, covered abundantly when in bloom with loose masses of lilac coloured, fragrant flowers, and later laden with rounded berries looking like marbles or bits of china. On them the blue jays feast, so it is commonly related, and only discontinue gorging after the fruit's juice has made them as tipsy as tipsy can be.



THE MILKWORT FAMILY.

Polygalaceæ.

A group of herbs, rarely small trees, or shrubs in the tropics with alternate, opposite or whorled and exstipulate leaves which bear perfect and irregular flowers, solitary and axillary, or grouped in various forms of inflorescences.

TALL PINE-BARREN MILKWORT. (Plate XCI.)

Polygala cymosa.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Milkwort.</i>	<i>Yellow.</i>	<i>Scentless.</i>	<i>Florida to Delaware and westward.</i>	<i>May-August.</i>

Flowers : growing usually in compound, corymbed spikes. *Calyx* : with five unequal sepals, the lateral ones of which are oblong, wing-like and appear like petals. *Petals* : three, united in a sort of tube, the middle one forming a keel and being crested at the summit. *Leaves* : scattered ; growing thickly in a tuft about the base and becoming bract-like on the stem ; linear, pointed at the apex, sessile ; smooth ; yellowish green. *Stem* : tall, two to four feet high ; erect, simple, smooth.

We find always a charm in the polygalas, for in one form or another they show us such elfin-like, quaint little flowers. Perhaps much of their expression is brought about by the lateral sepals, which often assume the shape and proportions of petals, while the legitimate ones are bunched and united in the centre as though content to let them flare in their stead. They are not always simple things to analyse. A peculiar trait about those of this species is that in drying they turn dark green. Besides showy flowers a number of the genus bear others that are cleistogamous near their subterranean parts. These look more like buds, are self-fertilized, and as they never open, are not exposed to the damage from heavy storms, or to be tossed about by the wind.

P. ramosa, low pine-barren milkwort, becomes when in bloom a most attractive individual and is very similar in growth to the above species, although altogether smaller. Its stem leaves, also, are less bract-like, and

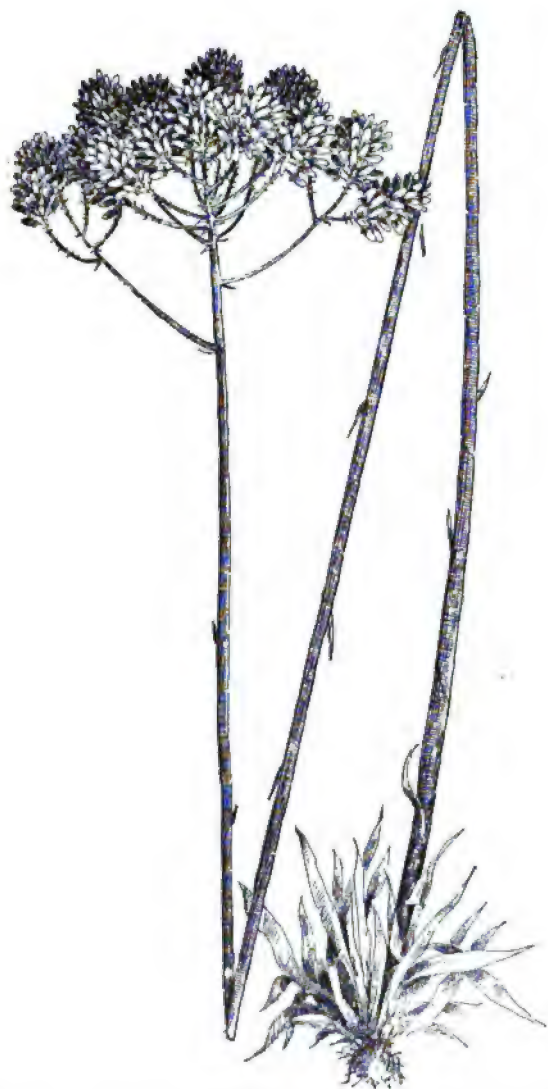


PLATE XCI. TALL PINE-BARREN MILKWORT. *Polygala cymosa*.
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the tuft of spatulate basal ones is an easy clue to the plant's identity. In low pine-barrens near Jacksonville, Fla., it is often abundant, and from there occurs to Mississippi and northward. The yellow flowers turn likewise dark green in drying.

P. Baldwinii, as the two preceding species, bears its flowers in close, corymbose spikes. They are, however, white, sweetly fragrant and when in blow fluffy and charming. The stem is angled and abundantly leafy from the base to its summit. It is also one which inhabits low pine-barrens about Florida and Georgia and delays its bloom until July and August.

YELLOW BACHELOR'S-BUTTON. ORANGE MILKWORT.

Polygala lutea.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Milkwort.	Orange-yellow.	Scentless.	Florida to New Jersey.	June-October.

Flowers: growing densely in oblong or globose terminal spikes. *Wings*: erect; oblong-ovate, sharply pointed at the apices; the corolla-tube minutely crested. *Stem leaves*: alternate, lanceolate-spatulate, or oblanceolate, blunt or pointed at the apex and sessile or nearly so; pale green; smooth, fleshy; the basal ones tufted, broader and larger than the others. *Stem*: six to twelve inches high, erect or ascending, simple, or with the upper branches spreading.

Although comparatively a low growing plant, there is not a brighter, gayer member of the genus than the bachelor's-button, nor is there one better known. Many of the natives in Florida whom I asked concerning it called it the "yellow clover," because no doubt its bloom suggested to them the shape of thick, clover heads; and when I pointed out the great difference in its leaves and protested against its being a clover, they took their revenge by gathering me a large bunch to carry away. At least they knew better than I that these blossoms are especially the haunts of chiggers or red bugs, which would soon make my life a burden to me. Until very late in the season the plant lingers in bloom, and when it occurs as far northward as New Jersey forsakes often the sandy barrens for a life in the bogs.

P. incarnata, pink milkwort, grows mostly in sandy, or light, dry soil and also bears its delicate, rose-purple flowers in solitary spikes at the end of tall, slender and glaucous stems. Their wings are elliptical and a good deal shorter than the petals, which display a prominently crested keel. The leaves are small, alternate and linear.

P. cruciata, cross-leaved, or marsh milkwort, covers an extended range through sandy swamps mainly along the coast and belongs to the group of polygalas that bear their leaves whorled about the stem. These are in sets of four, linear, or oblong-linear and mostly bluntly pointed at the apex. The cylindrical, spiked heads of rose-purple flowers often remain in bloom as late as November and are nearly or quite sessile.

LARGE FLOWERED MILKWORT. (Plate XCII.)

Polygala grandiflora.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Milkwort.	Rose-lavender.	Scentless.	Florida and Mississippi to South Carolina.	July-September.

Flowers: large; irregular, scattered in long, slender racemes. *Sepals*: five, three of which are green, minute and pointed, the lateral ones being large, obovate-cuneate and appearing like wings. *Petals*: three, alternating with the sepals, the lower one or keel, concave, not bearded. *Leaves*: small, alternate, with short, downy petioles, linear, oblong or lanceolate, tapering at both ends; entire; bright green. *Stem*: erect; about twelve inches high; branched, leafy, pubescent.

Most cheerfully we greet this beautiful one of the polygalas, with its delicate personality quite different from that of the bachelor's-button, or the others which have been mentioned. It seems to us more, perhaps, as though its associate should be the small green wood orchid, *Habenaria clavellata*, to find which we push aside the undergrowth and search by the stream's side. That it and the two species that follow produce their flowers in racemes gives them in any case a better chance to show their beauty than those have which are closely packed in spikes. The generic name of this interesting family of ancient Greek origin means "much milk" and was deemed appropriate because cows, through eating the plants, were supposed to give an extra quantity of the fluid.

P. polydama, racemed milkwort, blooms in early May and is rather a low, glabrous and leafy plant, showing a terminal raceme of delicate rose or purple tinted flowers. Shooting from the base also are cleistogamous ones, those imperfect but fertile blossoms well disposed to do their duty.

P. paucifolia, fringed polygala, gay-wings or flowering wintergreen, is undoubtedly lovely; its flowers being comparatively large, about three quarters of an inch long, brilliantly rose-purple with a crested and exquisitely fringed corolla and growing in the axils of large, ovate leaves produced near their stem's summit. Those leaves, however, which occur on the stem are small and bract-like. As the preceding species this plant also is one which bears cleistogamous flowers. From April until July it blooms through its extended range and has in certain parts of South Carolina the honour to grow with *Shortia* under the rhododendrons' shade.



PLATE XCII. LARGE FLOWERED MILKWORT. *Polygala grandiflora*.
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THE SPURGE FAMILY.

Euphorbiaceæ.

Trees, shrubs or herbs commonly with milky acrid juice, opposite, alternate, or whorled leaves, entire, or toothed on the edges and which bear monœcious, or diœcious flowers.

Among the many members of this very large order that have from lack of space here been omitted we recall *Ricinus communis*, the castor-oil plant. Mostly it is planted in gardens throughout the south for its virtue in keeping away ground moles, but it is also occasionally seen as an escape.

ALABAMA CROTON. (Plate XCIII.)

Crôton Alabamënsis.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Spurge.</i>	<i>White.</i>	<i>Scented.</i>	<i>Central Alabama.</i>	<i>All the year.</i>

Flowers: monœcious, growing in terminal racemes. Calyx of the sterile flowers, five-lobed. *Petals*: about equalling the sepals in length. *Stamens*: twenty, or more. Fertile flowers, growing at the bases of the sterile spikes. *Leaves*: alternate, with scaly petioles, oblong-lanceolate and rather blunt at the apex; entire, dark green and smooth above, the lower surface covered with silvery and lustrous scales, as are also the twigs; thin. *Stem*: tall, much branched, woody, six to ten feet high and covered with a white, or greyish bark.

This most rare and very local spurge is no doubt the beautiful one of its genus, and in Alabama, at Pratt's Ferry and near the Little Cahawba River, where it was discovered by Professor E. A. Smith, it forms thickets of such extent and impenetrability that they are known by the inhabitants of this region as "Pivet brakes." Away from its native haunts it is mostly seen in parks, where through the wondrous silvery light of its leaves' undersides it is ever a most ornamental individual.

C. glandulosus, glandular croton, a hairy, rough plant, is mostly found in sandy, waste ground, or fertile soil about dwellings. Usually its stem is corymbosely branched, and the leaves with their conspicuous basal glands are oblong and ruggedly serrate. Very insignificant are its spikes of bloom, although the four petals of the staminate flowers are longer than the calyxlobes.

C. maritimus, an inhabitant of sand drifts along the coast from Florida to North Carolina, is noticeably covered with a somewhat rusty and scurfy pubescence. It is a bushy plant, two to three feet high, and, as is often customary with the spurges, branches in the way of umbels. Its flowers are without petals. When in fruit, however, the three-celled capsules are very pretty, being pale green, velvety and containing greyish, mottled seeds.



PLATE XCIII. ALABAMA CROTON. *Croton Alabamensis*.
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FLOWERING SPURGE.

Euphorbia corollata.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Spurge.	White.	Scentless.	Texas and Florida northward.	May-October.

Flowers : minute, monœcious, growing at the ends of forked branches and surrounded by a white, corolla-like involucre with five rounded lobes. *Staminate flowers* : with one stamen scattered over the inner surface of its involucre. *Pistillate flowers* : growing singly in the cup-shaped or top-shaped involucre and having a three-lobed ovary and three styles. *Leaves* : alternate on the stem, and whorled just below the umbel, oblong or oblong-spatulate, entire, thick, smooth above, bright green and mostly hairy underneath. *Stem* : two to three feet high ; divided umbellately into branches, which again divide and bear the flower-heads, purplish, or spotted.

Very, very commonly we see this little plant flecking thin strips of woodlands or wayside paths with its tiny white flowers. And yet it is not the true flowers which attract us, but their involucre flaring about as though they were so many orthodox little petals. These appendages, moreover, subtend yellowish-green glands, a custom not unusual with this genus. That the spurges have certain medicinal properties has for many years been known ; and of this species especially the horizontal rootstock is collected.

E. heterophylla, various-leaved spurge, presents little in general appearance that is similar to the preceding species. It is erect, pubescent or nearly smooth, rather coarse looking and bears alternate oval leaves, the uppermost deeply lobed, with rounded sinuses at the sides which extend more than half way to the midrib. The forked branches at the summit of the stem bearing the flower cluster are very short, while near the flowers the leaves become coloured bracts and appear as a gay involucre. They are brightly tinted with old rose and thus form quite the striking feature of the plant.

E. maculata, spotted spurge or milk purslane, an extremely dainty, graceful little prostrate herb, is commonly seen in waste ground and well over the country. Its leaves are very small, oblong, finely serrate and besides being blotched turn to brilliant shades of red and purple. Along the pubescent branches occur most abundantly in the axils the small white or red involucre.

TREAD-SOFTLY. SPURGE NETTLE. (Plate XCIV.)

Jatropha stimulosa.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Spurge.	White or pink.	Scentless.	Virginia to Florida and westward.	March-September

Flowers : monœcious, growing in cymes. *Calyx* : of the sterile blossoms, showy ; salver-form, with five lobes. *Petals* : none. *Stamens* : ten, five of which



PLATE XCIV. TREAD SOFTLY. *Jatropha stimulosa*.
(302)

have united filaments. Styles of the fertile flowers three, parted to near the base. *Leaves*: alternate, with long hairy petioles, rounded, cordate, palmately parted into three to five oval segments, pointed at the apex, entire or roughly toothed, thin, and having scattered along the veins of both surfaces sharp glass-like prickles. *Stems*: simple or branched, erect and bristly with sharp-pointed hairs.

In the quaint, common name of this plant, "tread-softly," there is breathed a wise precaution, for so beset is it with lustrous hairs as fine and sharp as spun glass that it might well cause annoyance to those who would ruthlessly trample it down. In dry, old fields near Jacksonville we were attracted by its strange, shiny look and found that although late in September a few of its blossoms still lingered in blow.

QUEEN'S DELIGHT. SILVER-LEAF.

Stillingia sylvatica.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Spurge.	Lemon-yellow.	Scentless.	Florida to Virginia and westward to Texas.	March-October.

Flowers: monœcious, growing in terminal, upright spikes from the ends of the stems; each flower being subtended by a bract with small glands at its base. Fertile flowers borne below the sterile ones. *Calyx*: cup-shaped; two to three-lobed. *Petals*: none. *Capsule*: rounded, green; two to three-valved. *Leaves*: alternate, obovate or elliptic, occasionally obtuse at the apex, tapering and sessile at the base; finely serrate or crenate, rather thick, smooth. *Stems*: one to four feet high, erect, leafy, smooth, branching from the base. *Root*: woody, thick.

Perhaps the queen's delight is more generally known by its practical name of queen's root, for very early in the spring many people sally forth quite oblivious to any other sensation than that of collecting its roots to later use in medicinal ways. It is, however, quite an interesting bloomer, and often it may be noticed that the pistillate flowers at the bases of the spike have developed into good-sized capsules, while still a yellowish glow proclaims that the staminate ones linger in blow. In light, dry soil it grows best.

S. aquatica, another species occurring as an inhabitant of ponds in the pine barrens from Florida to South Carolina, is a shrubby plant. Usually its spikes of bloom are short and the capsules at their bases small and smooth.

Sapium sebiferum represents another extreme, and was originally described and regarded as a member of the genus *Stillingia*. It is a tree of from twenty to forty feet high. Along the coast from Georgia to South Carolina it is known and in June and July sends forth its thickly flowered spikes of bloom. It has been introduced in this country from China.

THE CROWBERRY FAMILY.

*Empetrææ.**Ceratiola ericoides.* (Plate XCV.)

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Crowberry.	Reddish.	Scentless.	Florida to South Carolina.	October, November.

Flowers : diœcious ; very small ; growing in axillary whorls. *Calyx* : with two fringed sepals and bracted at its base. *Corolla* : with two petals. *Stamens* : two, conspicuous. *Style* : short ; stigma, cleft. *Drupe* : yellowish ; somewhat persistent. *Leaves* : not half an inch long, with very short, yellowish petioles ; narrowly linear, or needle-shaped, with revolute margins and grooved through the underside ; olive-green ; lustrous above ; glabrous ; evergreen. An erect shrub, two to five feet high, verticillately branched ; the young growth pubescent.

This is one of our dearest, prettiest little shrubs, having, as it grows through dry barrens, a heath-like look. And especially charming is it in the autumn when lit with its clustered red bloom, for which the stone-grey and rather rough bark forms so artistic a background. Happily it is beginning to be abundantly seen in cultivation.



THE BOX FAMILY.

Buxcææ.

ALLEGHANY MOUNTAIN SPURGE.

Pachysandra procumbens.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Box.	Purplish or green.	Fragrant.	Florida and Louisiana to Virginia.	February-May.

Flowers : monœcious, growing in lateral spikes low on the stem and in the axils of the scales. *Staminate flowers* : dense, at the upper part of the spike ; pistillate ones few, below the others. *Sepals* : four, ovate, ciliate, green or purplish. *Petals* : none. *Stamens* : four, their filaments thick and exerted. *Leaves* : alternate ; broadly ovate, or obovate, pointed or bluntly so at the apex and narrowed at the base into the margined petiole ; coarsely dentate, entire, at least at the base. *Stem* : curving ; ascending ; sometimes pubescent. *Rootstock* : matted.

The Alleghany mountain spurge shows us a form of growth which seems perhaps peculiar, and one with which we are little accustomed. Usually herbs raise high their flowers as though with pride, but those of this plant cling to the stem about its lower part and let the leaves tower boldly above them. Even then their thick, white stamens, from which the generic name has been given, are their most prominent feature. In dense, shaded woods through its range the plant throws out sometimes an abundant leafage, and is the only one of the family which inhabits America, the other species of the genus being a native of Japan.

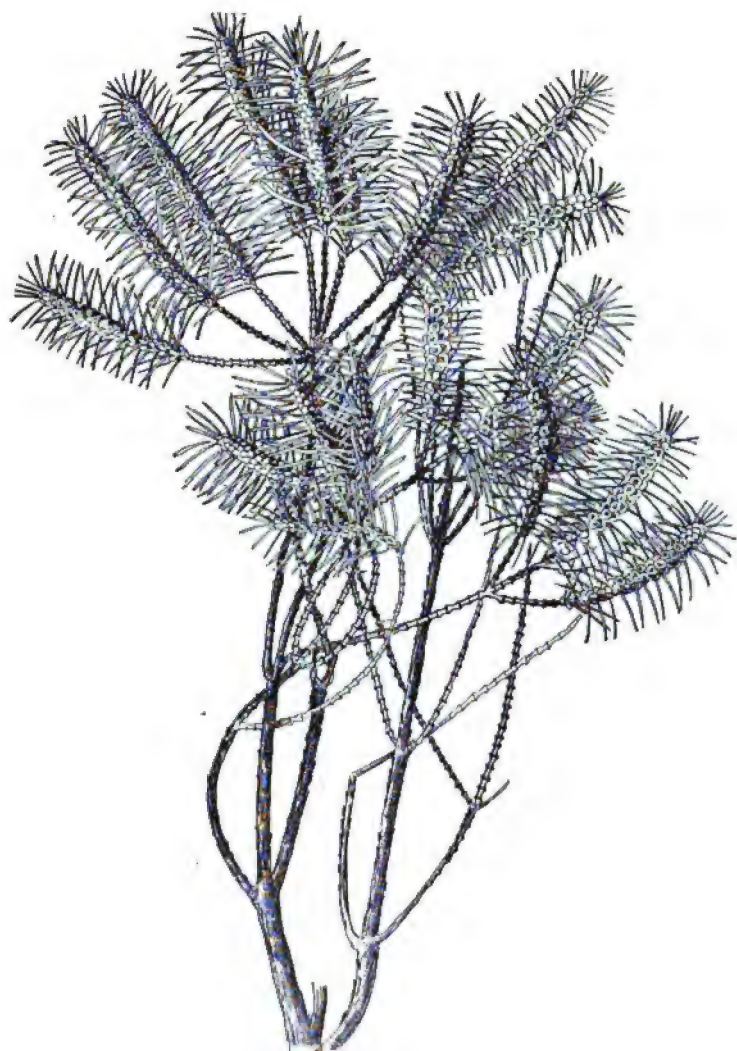


PLATE XCV. *Ceratiola ericoides*.
(305)

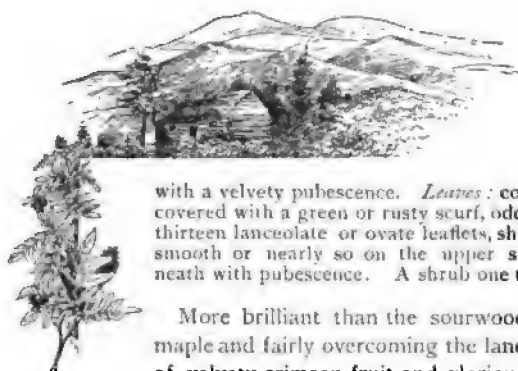
THE SUMAC FAMILY.

Anacardiaceæ.

Trees or shrubs mostly possessed of resinous or milky juice, and which bear simple, or compound alternate, rarely opposite leaves; mainly regular, perfect, or imperfect flowers and drupaceous fruits.

Rhus Michauxi. (Plate XCVI.)

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Sumac.	Creamy or greenish white.	Scentless.	Georgia and North Carolina.	July. Fruit: August, September.



Flowers: very small, growing thickly in a dense panicle. *Calyx:* persistent, usually five-cleft. *Petals:* spreading, imbricated in the bud. *Stamens:* five. *Pistil:* one; styles three. *Drupes:* deep crimson, one seeded and covered

with a velvety pubescence. *Leaves:* compound, with long petioles, covered with a green or rusty scurf, odd-pinnate, with from seven to thirteen lanceolate or ovate leaflets, short stalked, coarsely serrate, smooth or nearly so on the upper surface and covered underneath with pubescence. A shrub one to three feet in height.

More brilliant than the sourwood, vieing with the scarlet maple and fairly overcoming the landscape with long bunches of velvety crimson fruit and gloriously tinted foliage we hail in the autumn this extraordinary genus of plants. Along the waysides, in corners of abandoned fields and through open strips of woodlands, constantly some one of them is found casting a rich, wine-red hue over florets already blackened and pale sedges.

In the field of usefulness they are also much sought; for the tannin contained in their bark and leaves and their milky juice, which in drying turns almost black, is extensively used as a varnish. In fact it is from a species of *Rhus* that the Japanese obtain their famous lacquer.

Famous among them all is *Rhus Michauxi*, which for nearly or quite a hundred years was completely lost to the world of science. It is but a few years ago that it was rediscovered.

R. glabra, smooth upland, or scarlet sumac, while being of somewhat the same personality as the preceding species is strongly marked by its smoothness. It is also glaucous. Again it bears its leaflets more numerously, there being from fifteen to thirty-one of them in the leaves of well-grown



PLATE XCVI. *Rhus Michauxii*.
(307)

plants. They are sessile and oblong-lanceolate. Over its extended range this sumac is generally known, and mostly by its dense, beautiful clusters of crimson velvety drupes.

R. copallina, dwarf, or mountain sumac, a most beautiful plant, occurs either as a shrub or small tree and from Florida northward to Maine. Its panicle of creamy or greenish white bloom is spreading, often very large and the drupes are crimson and hairy. Again the long petiole which bears the slender and lanceolate leaflets is winged along its margins, while they, as well as the branches, show much tomentum. In the autumn these deep green and lustrous leaves turn to rich shades of purple. None of the species of sumac which have already been mentioned is poisonous; and in the mountains of the Southern States, this one more than any other is collected in large quantities for the sake of its tannin.

R. Vernix, poison sumac, elder, ash or dogwood, as this shrub is variously known, is thought by many to be the strikingly beautiful member of the genus. It is also the one to be most carefully avoided, as its juice and all its parts are extremely poisonous. Some marks, therefore, that should be remembered for its identification are its smooth, unwinged leaf stalks, bearing from seven to thirteen entire leaflets, and its axillary panicles of bloom, followed later by greenish white, smooth drupes closely resembling small peas. It is besides exclusively an inhabitant of swamps, ranging from the Gulf region to Canada.

R. Toxicodendron, poison ivy or poison oak, a climbing vine attaching itself by means of aerial rootlets, is well known through the south, and bears three-foliate leaves with crenately-lobed and more or less pubescent leaflets and which in the autumn become beautifully coloured. Its small panicle of bloom, developing later into whitish, smooth drupes, is a feature distinctive enough to be remembered, and in thus doing, it should be let alone, as its juice is very poisonous.

AMERICAN SMOKE-TREE. MIST TREE. CHITTAM- WOOD. (Plate XCVII.)

Cótinus Cotinoides.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Sumac.	Green.	Scentless.	Missouri to Alabama.	April, May.

Flowers: minute; perfect, growing in an open, spreading and terminal panicle, the pedicels long, slender and becoming plumose in fruit. *Drupe:* hard, smooth. *Leaves:* large, simple; petioled, oval, or obovate, rounded at the apex and pointed or rounded at the base, entire, dark green and smooth above, glabrous or sparingly pubescent underneath, thin. A tree attaining at most forty feet in height.

Only in certain parts of the South does the American smoke-tree grow wild. At first it was discovered by Nuttall, and subsequently by

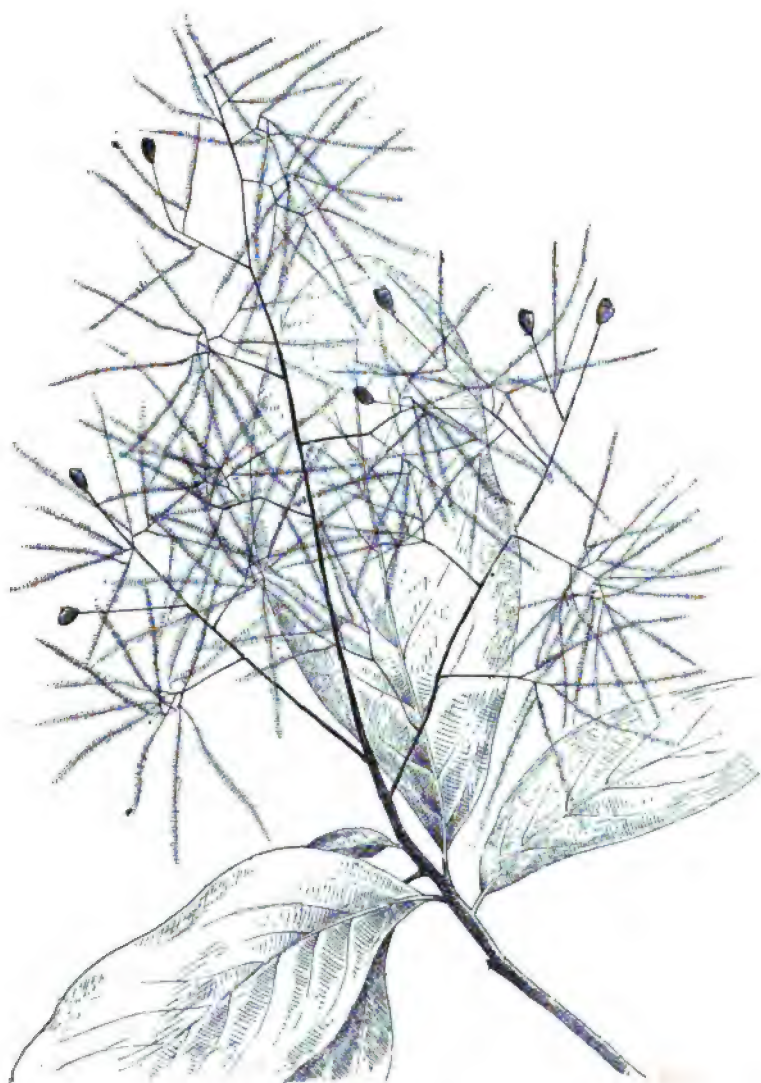


PLATE XCVII. AMERICAN SMOKE-TREE. *Cotinus Cotinoides*.
(309)

Buckley, who made the trees his chief object of study. Very like it looks to the European one which so often we see in cultivation, and for which the French have the pleasing name of "arbre à perruque." Indeed it does seem as though these trees had put on white wigs when their fruiting pedicels become elongated and very feathery. From the orange-yellow wood of our species a dye, rich in colour, is extracted.



THE CYRILLA FAMILY.

Cyrillaceæ.

Trees or shrubs with simple, alternate, evergreen leaves, and white, regular, perfect flowers which grow in bracted racemes.

SOUTHERN LEATHERWOOD. IRONWOOD.

(Plate XCVIII.)

Cyrilla racemiflora.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Cyrilla.</i>	<i>White.</i>	<i>Scentless.</i>	<i>Texas and Florida to Virginia.</i>	<i>May-July.</i>

Flowers: growing in long, slender racemes terminal on the twigs of the preceding year, and having scale-like bracts at the bases of their pedicels. *Calyx:* persistent; deeply cleft into five sharp-pointed sepals. *Petals:* five, spreading, early falling. *Stamens:* five. *Pistil:* one with a two-lobed style. *Capsule:* small; ovoid. *Leaves:* obovate, oval or oblanceolate, pointed at the apex and tapering at the base into a short petiole; entire; lustrous above, glabrous on both sides, thick, evergreen. A shrub or small tree ten to thirty-five feet high, with silvery grey and smooth branches.

Although this plant is not common, the people know it well for its bark, which at the base pulverises easily, and is used by them as an application to ulcers and sores. They seek it along the margins of ponds and through low pine forests, where often it grows with the water gums and fetter-bushes, and where in the autumn, when the leaves of the deciduous shrubs have turned to scarlet and orange, its glossy evergreen or long persistent ones appear strikingly beautiful. Two species of *Cyrilla* are recognised, the other being known as *Cyrilla parvifolia*, a smaller plant with smaller leaves, shorter racemes and globose capsules.



PLATE XCVIII. SOUTHERN LEATHERWOOD. *Cyrilla racemiflora*,
(311)

BUCKWHEAT TREE. TITI. (Plate XCIX.)

Cliftonia monophylla.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Cyrilla.	White.	Fragrant.	Florida to North Carolina and westward.	February-April.

Flowers: growing in nodding racemes on twigs of the preceding year, the pedicels having reddish, scale-like and early-falling bracts at their bases. *Calyx:* persistent; minute; with five rounded sepals. *Corolla:* with five spreading petals narrowed at their bases. *Stamens:* ten, in two rows of different lengths. *Anther:* orange coloured. *Pistil:* one. *Drupe:* three to four winged; dry; nodding. *Leaves:* one and a half to two inches long; oblanceolate, mostly blunt at the apex and tapering at the base; entire; thick; bright green and shiny above; paler below and chalky underneath when old; leather-like. A shrub or small tree forty to fifty feet high and having greyish twigs.

In the damp, peaty soil of many a shallow swamp we find this plant as a shrub intermingled with wax myrtles, fetter bushes and the swamp bay; but in the deeper swamps of western Florida it attains to a much greater size. Those of its leaves which have an ashen hue are usually very old and have remained persistent on the boughs until the autumn of their second year. The generally used common name is in reference to the fruit, which has a resemblance to that of buckwheat.



THE HOLLY FAMILY.

Ilicaceæ.

Trees or shrubs with simple, alternate, petioled leaves, either evergreen or deciduous, and with entire, serrate, or bristle-toothed margins, and which bear small, white or greenish, regular flowers, perfect or imperfect.

LARGE-LEAVED HOLLY.

Ilex monticola.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Holly.	Whitish.	Scentless.	Alabama and North Carolina to New York.	May. Fruit: September.

Flowers: minute, the sterile ones growing mainly in axillary clusters, the fertile ones solitary or in pairs with slender pedicels; calyx-lobes, ciliate. *Corolla:* with rounded petals. *Drupe:* abundant; bright red; fleshy; globose. *Leaves:* on short lateral branches; ovate or ovate-lanceolate, long pointed at the apex and wedge-shaped, rounded, or tapering at the base into slender petioles; sharply serrate; thin; glabrous or slightly pubescent underneath along the veins; deciduous. A shrub or slender tree occasionally forty feet high.



PLATE XCIX. BUCKWHEAT TREE. *Cliftonia monophylla*.
(313)

On the road up Roan Mountain there is a tall, shapely tree of beauty so pronounced that it seems to be generally observed, and as our most reticent charioteer deigned to tell us, "nobody knows jist what it be." He certainly didn't know. It is, however, a large-leaved holly, remarkably well grown and beautiful. The fruits, as we saw them, not yet ripe still showed their cheery yellow tint, mostly clouded over with red, while the fully ripe ones were almost as large as cherries, fleshy and brilliantly red. They do not, however, last over the winter. In fact from the spray I carried away many had fallen before we returned from the mountain.

Besides the large and fine holly trees which grow so well in the south the genus furnishes a wealth also of small shrubs, adding in the low country greatly to the luxury of the vegetation.

I. opaca, American holly, is perhaps the popular one of the genus: the one most sought for decorations at Christmas. It occurs as a shrub, or again as an imposing, well-shaped tree with an utmost height of fifty feet. Its leaves are characteristic; oval or obovate in outline, sharp-pointed at the apex and with a few prominent spine-tipped teeth, the sinuses between them being rounded. Above they are smooth and lustrous, and somewhat tinged with yellow underneath. Over the winter the hard, bright red drupes remain on the trees, thus constituting perhaps its greatest charm. Frequently not until the early spring, when the old leaves are falling and their places being taken by fresh ones, do they turn black and fall to the ground. In the mountains of North Carolina there is a yellow as well as the red fruited form of *Ilex opaca*.

I. verticillata, black alder or Virginia winterberry, grows as a tall, bushy shrub to often twenty-five feet high and bears oval or oblong-lanceolate leaves, finely serrate and quite pubescent on their undersides along the ribs. As its specific name implies, its flowers grow thickly in the axils of the leaves, appearing like whorls, and the fruit following them is perhaps brighter and more abundantly produced than that of any other of the genus. It lasts for some time after the leaves have turned black and have fallen, frequently being used as Christmas decorations. In Tennessee especially the black alder is common, where it inhabits mostly swampy places. As many of the hollies it is very valuable in cultivation.

I. glabra, evergreen winterberry, gallberry or inkberry, a handsome shrub of sandy soil, grows well from Louisiana and Florida to Massachusetts, seldom, however, becoming over six feet high, while often about sandy stretches near Savannah, Ga., and in Florida it remains quite low and forms an abundant, though rather stiff undergrowth. Its lustrous, bright green leaves, pale on their under sides, are considerably spotted with dark coloured dots. The drupes are very black.

YAUPON. CASSENA. (Plate C.)

Ilex vomitoria.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Holly.	White.	Scentless.	Florida to Virginia and westward to Texas.	May.

Staminate flowers: growing closely to the branches in short-peduncled cymes. *Pistillate cymes*: sessile; one or two flowered. *Calyx-lobes*: rounded and obtuse. *Petals*: four, oblong, narrowed at the base. *Stamens*: four, on the corolla. *Drupes*: round, red. *Leaves*: small, with slightly pubescent petioles; ovate-oblong, blunt at the apex and rounded at the base; serrate, or approaching crenate, bright-green above, paler below; glabrous; evergreen. A shrub or small tree occasionally thirty feet high.

The Carolina, or South Sea tea, as also this holly is called, occurs most generally near salt water, although it grows well into the interior of Arkansas. In the Atlantic States its leaves are annually dried and used by the natives for tea. It is also the plant from which the Indians made their famous "black drink."

When the time of year drew near they assembled, according to a custom of long standing, from parts far and wide at some chosen place where the plant grew in abundance. Here they built a great fire and hung over it a kettle. Into this with water they then threw quantities of the yaupon's leaves. As soon as they had sufficiently brewed they began drinking the beverage and were soon in consequence violently sick. But still they were undeterred. Again they drank with the same result, and so for two or three days they continued drinking and being sick, or until they deemed their systems to be sufficiently cleansed. After this they returned to their several habitations, each carrying on the way a branch of the holly.

I. Cassine, dahoon holly, bears oblanceolate or oblong-obovate leaves, sometimes four and a half inches long, and which are entire, or display a few sharp-pointed teeth. On their upper surfaces they are shiny and glabrous, but usually show underneath a fine pubescence. They last over the winter, as do also the round red drupes. Sometimes the dahoon holly becomes a tree of about twenty-five feet high, but much more often it remains a shrub. It is an inhabitant of the low country from Louisiana and Florida to Virginia and grows in woods.

I. decidua, swamp or meadow holly, chooses for its home such haunts as swamps and shaded ravines, and is one that sheds its leaves in the autumn. Early in May its small, white flowers growing on slender pedicels unfold with the leaves. The parts of the flowers are usually in fours and, as all the flowers of the hollies, are inconspicuous in comparison with their fruits. Sometimes it becomes tree-like, about thirty feet high, while the bark of its young shoots presents a beautiful silvery grey.



PLATÉ C. YAUPON. *Ilex vomitoria*.
(316)

THE STAFF-TREE FAMILY.

Celastraceæ.

Trees or shrubs, sometimes climbing, with alternate or opposite simple leaves, and small, perfect or imperfect, regular flowers, usually borne on, jointed pedicels.

BURNING BUSH. STRAWBERRY BUSH. WAHOO.

Euonymus Americanus.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Staff-tree.</i>	<i>Greenish.</i>	<i>Scentless.</i>	<i>Florida and Texas to New York.</i>	<i>June. Fruit: September-November.</i>

Flowers: perfect, solitary or a few growing on slender axillary peduncles. *Calyx:* four to five cleft, the lobes spreading. *Petals:* five; rounded; mostly clawed. *Stamens:* very short. *Capsule:* large, rough, three to five celled and enclosing seeds covered with an exquisite scarlet aril. *Leaves:* with very short petioles, ovate, or broadly lanceolate, long pointed at the apex and rounded, or acute at the base; finely crenulate, smooth, or very slightly pubescent. A large shrub three to eight feet high with green or ash coloured and angled twigs.

When the shadows lengthen on the dial and the days shorten, and one after another the leaves and flowers fall to mother Earth, there still lingers one burning, brilliant spot on the landscape, which like the last dart of a flame before the fire is dead guards the threshold of winter. It is the burning bush, which at this season displays its chief beauty, its warty pods and scarlet arils. No doubt it is the only lively looking thing in sight, should not the witch-hazel be somewhere near in the low wood. Now very familiar is the shrub in cultivation, where in thus prolonging the pageant of colours it is of inestimable value.

CANBY'S MOUNTAIN LOVER. (Plate CI.)

Pachystima Canbyi.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Staff-tree.</i>	<i>Brownish.</i>	<i>Scentless.</i>	<i>Mountains of North Carolina and Virginia.</i>	<i>April, May.</i>

Flowers: minute, perfect, growing singly or a few clustered at the end of axillary peduncles. *Calyx:* four-lobed. *Petals:* four, oblong-ovate. *Stamens:* four inserted beneath the disk. *Capsule:* two-celled; oblong. *Leaves:* opposite; with short petioles, linear oblong, or obovate, serrate near the apex, the margins slightly revolute, coriaceous, smooth, evergreen. A low, leafy shrub, at most one foot high, with corky branches.

It was Mr. Wm. M. Canby who first found this very rare little shrub growing along the rocky cliffs of the New River, near Eggleston, Virginia. Sometimes it occurs but a few inches high, is evergreen and has curious yellow roots. Its branches also are decumbent and often turn about and root themselves in the ground.



PLATE CI. CANBY'S MOUNTAIN LOVER. *Pachystima Canbyi*.
(318)

CLIMBING BITTER-SWEET. WAX-WORK.

Celastrus scandens.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Staff-tree.	Cream-white, or greenish.	Scentless.	North Carolina north- ward and westward.	May, June. Fruit: September-November.

Flowers: small, imperfect; growing in compound, terminal racemes on jointed pedicels. *Calyx*: five-cleft, cup-shaped. *Corolla*: with five spreading petals. *Stamens*: five, inserted on the lobed disk. *Capsules*: orange-red, the rounded divisions bursting and showing within the scarlet arils. *Leaves*: alternate somewhat two-ranked, ovate or ovate-lanceolate, long pointed at the apex and pointed at the base; finely serrate or crenate-serrate; glabrous. A climbing, woody vine.

Through the dreary and cold days of November there is much of cheerfulness radiated from this woody vine-like shrub as it is seen hung with its brilliantly coloured fruit. Often it grows through woods, climbing over trees and rocks and forming a gay contrast to the witch-hazel bush in bloom perhaps not far distant. The evergreen smilax near by and the cheerful call of the little brown quail all then combine to shed a ray of hope and life through the otherwise grey and cheerless aspect of barren trees. Besides gathering long sprays hung with the fruits for decorating the home during the winter, country people collect the roots to use in various medicinal ways.



THE BLADDER-NUT FAMILY.

Staphyleaceæ.

AMERICAN BLADDER-NUT.

Staphylea trifolia.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Bladder-nut.	White.	Scentless.	South Carolina and Missouri northward.	April, May.

Flowers: growing in short axillary drooping racemes and having their pedicels bracted at the bases. *Calyx*: campanulate, with five sepals almost as long as the petals. *Sepals*: five, narrow. *Stamens*: five, as long as the divisions of the perianth. *Pistil*: one, with three styles. *Capsules*: large; bladder-like, opening at the summit and containing in each cell from one to four seeds. *Leaves*: opposite; three-foliate, with long petioles, and linear stipules. *Leaflets*: almost sessile, excepting the terminal one, oval or ovate, taper-pointed at the apex and pointed or rounded at the base; finely serrate; thin; pubescent when young. A shrub five to fifteen feet high, with smooth, often striped bark.

It is not often that we find this shrub, and perhaps when we do it puzzles us a little, especially if its delicate white flowers are in blow. When they are succeeded, however, by the large pods, inflated and somewhat the colour of bladders, we find less difficulty in relegating the shrub to this genus, of which through our range it is the only representative.

THE MAPLE FAMILY.

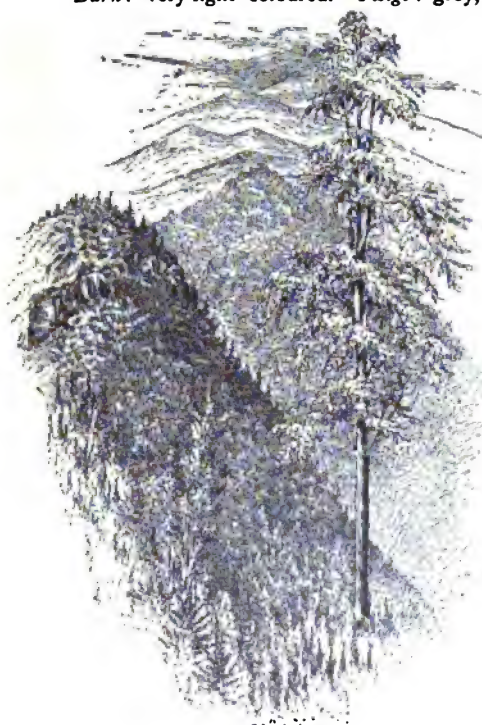
Aerææ.

Large trees or shrubs, with watery or sugary sap; simple or pinnate, opposite, long petioled leaves, mostly palmately lobed, and which produce regular, diœcious, or polygamous flowers growing in axillary, and terminal clusters. Fruit: of two-winged samaras, each one seeded and united at the base.

Acer leucoderme. (Plate CII.)

FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
Maple.	Round-headed.	20-40 feet.	North Carolina and Georgia southwestward.	March, April.

Bark: very light coloured. *Twigs:* grey, or reddish brown. *Leaves:* small, one and one half to two and one half inches broad, with long, slender petioles; broadly rounded with cordate bases and mostly five-lobed, their apices pointed and lobed, or entire. Bright green and glabrous above, pubescent underneath and tufted in the angles of the ribs. *Samaras:* small; three quarters to an inch long with widely divergent wings.

*Silver Maple.*

Among the native maples this one is rather a curiosity, and cannot but be of interest to those concerned in regarding the genus. The specimen from which the accompanying illustration was drawn came from the Yellow River valley of Georgia.

Even as early as February blossoms may be seen beginning to burst forth on some of the precocious species of maples. And many of them are exquisite. It seems strange therefore that comparatively so few people should be conscious of their existence. Generally their

seeds ripen in the autumn, then fly by means of their membranous wings and frisk about until they find some niche or hole to rest in and finally ger-



PLATE CII. *Acer leucoderme*.
(321)

minate the following spring. But *Acer leucoderme* blooms so early that sometimes its seedlings are well started in life before the winter comes on. Of the genus the many species have usually well marked characteristics and are respectively known not only through their silvicultural character but by the usefulness of their wood, the properties of their sap, and the ability of their barks to yield a red or yellow colouring matter.

A. saccharinum, silver maple, white or soft maple, is also one which comes early into bloom and especially when growing along a stream, it then often putting forth as early as February. Its flowers, in dense, lateral, sessile or nearly sessile clusters, are therefore well on with their seed-making before the leaves have begun to show. The large samaras, of which one wing is frequently imperfectly developed, diverge widely and hang from long drooping pedicels. The tree is very graceful, with wide-spreading branches, its leaves being finely cut and the sinuses narrow and pointed. And long in the country it has passed from mouth to mouth that when upturned and showing their silvery undersides, rain is on its way.

A. rubrum, red or swamp maple, water maple, also blooms through the lower districts as early as February, and even in the north during a mild winter, will open its buds at the first approach of spring-like weather. Its flowers are the most beautiful of all the maples, being crimson, sometimes golden-tinted and growing in full, lateral clusters. The small petals are narrowly oblong and the protruding stamens of the sterile individuals embellish them greatly with beauty. In shape the leaves are very variable, mostly, however, their three to five sharp lobes are irregularly dentate, and they are slightly pubescent and pale underneath. Not knowing, perhaps; the constancy of this latter feature, the people about the Dismal Swamp believe that they in some mysterious way turn to white before a storm. Although smaller in the south than through its northern range, the red maple is still one of the most beautiful trees, its crimson bloom covering its grey structure in earliest spring and hanging as a veil over the grim woods. In the autumn also its foliage turns to a brilliant unrivalled scarlet. Besides the uses of the wood in making furniture and other things, the tree's bark has been used to dye with and makes an excellent ink. This the Indians knew, as well as how to produce an oil by boiling the white oak's acorns in a strong lye made from the wood's ashes.

BLACK SUGAR MAPLE.

Acer nigrum.

FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
Maple.	Rounded.	50-100 feet.	Louisiana and Alabama northward.	April, May.

Bark: almost black, rough; that of the twigs, greyish or green when very young and marked with small, pale dots. *Leaves*: with long, smooth grooved

petioles; broadly rounded, cordate or squared at the base and having from three to five broad, short lobes with taper-pointed apices, the lower ones not prominent or absent, usually entire. **Sinuses**: rounded, squared or pointed. Bright green on both sides, glabrous above and becoming so underneath. **Flowers**: growing in drooping corymbs. **Samaras**: abundant; divergent; about one and one half inches long.

A tree so large and beautiful as the black maple should, it seems, be known by all, and undoubtedly it is familiar to many who also perchance mistake it for the sugar maple. To this noble tree it is indeed very similar but can always be distinguished by its almost black bark, the greenness of its leaves on both sides, and their shorter and broader lobes. These latter, however, are subject to many variations. In very large quantities the sap of this tree will yield sugar.

A. Sacccharum, sugar maple, rock, or hard maple, grows mostly along the mountainous parts of our range where its rounded, full proportions and the fine, symmetrical shape of its rather pale leaves make it as elsewhere one of the most imposing individuals of our silva. Northward it is the principal source of maple sugar, but in the south it will not yield to the same extent and therefore the industry is principally in vogue among the natives for their own use. The mountainous district also is usually far from a market. Through the testimony of early writers we have reason to believe that the Indians knew the art of sugar-making and that they strengthened themselves by drinking the sap when thirsty on their journeys. It was as wine to them. Further northward they knew sugar-making as an industry and marketed the sugar in birch-bark cornucopias. From the tree's ashes immense quantities of potash are marketed and the valuable bird's-eye and curly maple are varieties of its wood.

A. Pennsylvanicum, striped maple, or moose wood, is shade-loving, and occurs through the forests in ravines and cool places with often the hemlocks, beeches and sugar maples. On the slopes of the Alleghanies and Blue Ridge mountains it forms its best development. Always, however, it is a handsome tree with greenish flowers produced in long, swaying racemes, while the samaras which follow them vary from a pale apple-green to soft shades of tan. In the winter it is still beautiful, its trunk and branches being vertically marked with lines of pale blue. Most often perhaps the mountaineers that "claim to know" the trees, call it the goosefoot maple, because its leaves which broaden towards the summit and divide into three well cut lobes suggest to them that bird's foot.

A. spicatum, mountain maple, sometimes known as the low maple, is found through our range mostly in the mountains and usually as a shrub of from six to ten feet high; although on the slopes of high peaks in Tennessee and North Carolina it becomes a small tree. Its bark is never striped, as

that of the goosefoot maple, and its leaves are smaller and more coarsely serrate. In similar, although erect racemes, it bears its flowers, and on both species they bloom after the leaves have unfolded. The samaras have slightly divergent wings and are really fascinating, as indeed are all the young seeds of the maples. Early in the autumn the leaves show often on their surfaces a mottling of deep green and wine colour.

ASH-LEAVED MAPLE. BOX ELDER.

Acer Negundo.

FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
Maple.	Wide-spreading.	20-50 feet or more.	Texas and Florida northward.	April. Fruit: July-September.

Bark of branchlets: greenish brown; ridged. *Leaves:* compound, with long slender stalks; odd-pinnate, with three, five or rarely seven, ovate leaflets taper-pointed at the apex and pointed, rounded or wedge-shaped at the base; coarsely and remotely toothed, often entire at the base; deep green above, pale underneath. *Ribs:* distinct; slightly pubescent. *Flowers:* yellowish green; diœcious; apetalous; growing from the sides of the branches in drooping clusters and appearing mostly before the leaves. The fertile ones in racemes of from six to eight inches long. *Samaras:* large; yellowish green, the wings well veined.

In many places the ash-leaved maple is a common tree through the forest, and prefers to grow near moisture, often along the stream's bank. Through the bright, cheerful colouring of its foliage it is especially attractive. Its connection with the maples is established by its double, winged samaras which, however, are more finely veined than theirs, and often become in the late season tinted with pink, or pale purple. Its foliage is more nearly like one of the ashes, in fact "stinking ash" is the tree's familiar appellation in South Carolina; for its bark is rather disagreeably scented. Of this the people become aware when collecting it for officinal use. In cultivation the tree is much seen and is desirable on account of its beauty and ability to withstand dry weather. It is, however, not long lived and becomes when old very scraggly.



THE BUCKEYE FAMILY.

Hippocastanaceæ.

Including forest trees, or shrubs with opposite, three to nine foliate leaves and irregular flowers which grow in large, terminal panicles.

SWEET BUCKEYE. BIG, OR YELLOW BUCKEYE.

Æsculus octandra.

FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
Buckeye.	Compact.	30-90 feet.	Georgia northward and westward.	April-June. Fruit: September.

Bark: dark brown, smooth or separating into thin strips. *Branchlets:* orange-brown when young. *Leaves:* palmately-compound with usually five or sometimes seven, long, oval, or elliptical leaflets, taper-pointed at the apex and base; sharply-serrate, glabrous above and pubescent along the ribs underneath. *Flowers:* pale yellow, growing on pedicels in close panicles. *Calyx:* oblong, with five points. *Corolla:* with four petals, the upper narrower and longer than the others. *Stamens:* shorter than the petals. *Fruit:* a round green husk, uneven on the surface, but without prickles and enclosing one or two large brown, shiny nuts.

Among the non-evergreen trees we find few more beautiful than this, the handsomest of the American buckeyes; and through our forests there are none others which produce leaflets spreading like the fingers of a hand. In the spring also their flowers are more showy than those of the greater number of trees. On the high mountain slopes of North Carolina and Tennessee the sweet buckeye attains splendid proportions and is there quite common. As of all the species its light coloured wood is soft, straight grained and easily worked, and is mostly employed for the making of small articles and paper. The seeds of the genus as is well known are too bitter to be palatable to man, but cattle and sheep feed on them freely. Flour is made from them, and the paste produced with such has great tenacity and is not eaten by moths. Bookbinders greatly prefer it to all other similar stuffs. But the silent moonshiner has a use all his own for this buckeye's seeds, as they are not peculiarly scented like those of other species. With them he gives the appearance of age, or the bead, as he calls it, to the whiskey he has distilled in some deep ravine, the still being hidden perhaps by the very tree's dense shade.

Æ. pavia, red buckeye, which may be found from Florida to North Carolina and westward, occurs as a small tree or shrub and is distinguished by its five lanceolate, or oval, finely serrate leaflets and its unusual-looking panicle of red flowers. The husk of its fruit also has the peculiarity of being quite smooth. By its bruised branches and roots a most disagreeable odour is emitted while the latter contain a mucilaginous substance which many natives utilise as soap. The ingenious also employ their narcotic properties as a means of stupefying fish.

Æ. parviflora approaches at most ten feet high, is shrubby and bears a long, raceme-like panicle of white flowers with stamens about three times as long as the corolla. Underneath its leaflets are covered with a white tomentum. In the upper districts of Georgia and South Carolina it is mostly found.

A. Hippocdstanum, horse chestnut, the symmetrical and beautiful tree so much seen in cultivation and bearing upright exquisite bunches of flowers and spiny fruit, is not a native of this country, but has been introduced from Europe.



Buckeyes near Grandfather Mountain.



THE JEWEL-WEED FAMILY.

Balsaminaceæ.

JEWEL-WEED. TOUCH-ME-NOT. SILVER-LEAF.

Impatiens biflora.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Jewel-weed.	Orange-yellow spotted with reddish brown.	Scentless.	Florida and Missouri northward.	June-October.

Flowers: nodding from thread-like, axillary pedicels, bracted about the middle. *Calyx:* with three unequal sepals, the large petal-like one extending backward into a sac which tapers into a little spur. *Corolla:* with two of the petals cleft into dissimilar lobes. *Stamens:* five, cohering about the ovary. *Pistil:* one. *Pods:* bursting elastically to release the seeds. *Leaves:* simple; alternate, with

petioles; ovate or elliptical, pointed or blunt at the apex, coarsely toothed; thin, pale and glaucous underneath. *Stems* : much branched, tender, purplish.

In an old publication more replete with sentiment than many that are now seen the jewel-weed, under the name of the "Humming-bird Tree," is described as follows :

"This plant the humming-bird feedeth upon, it groweth in wet ground and is not at its full growth till July, and then it is two cubits high and better, the leaves are thin and of a pale green colour, some of them as big as a nettle leaf, it spreads into many branches, knotty at the setting on, and of a purple colour, and garnished at the top with many hollow, dangling flowers, speckled with deeper yellow as if it were shadowed, the stalks are all hollow as a kix and so are the roots which are transparent, very tender and full of a yellowish juice."

Indeed no lovelier wild flower grows than the jewel-weed, and delicate though it appears, it sometimes grows in moist places to a height of five or six feet. Many country people, now regard its leaves as being able to cure the effects of poison ivy.

I. aurea, pale touch-me-not, is very similar to the other species but grows taller and stouter and has its flowers less spotted with brown, they sometimes being quite without dots of any sort. That both of these plants are called touch-me-not is in reference to the way their pods burst open and coil up thus scattering the seeds, whenever jarred by the slightest touch.



Jewel-weed.

THE BUCKTHORN FAMILY.

Rhamnaceæ.

Trees or shrubs, the latter erect or climbing, with stipulate, simple, mostly alternate leaves and white, or greenish, regular flowers which grow in axillary or terminal inflorescences. Fruit: a drupe or capsule.

SUPPLE-JACK.

Berchemia scandens.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Buckthorn.	Greenish white.	Scentless.	Florida and Texas to North Carolina.	June. Fruit: September.

Flowers: very small; growing in axillary or terminal clusters. *Calyx*: five-toothed. *Petals*: five, about as long as the calyx. *Stamens*: five, with thread-like filaments. *Drupe*: purple, oval, the crustaceous stone two-celled. *Leaves*: alternate, with slender petioles, ovate or oblong; pinnately veined; the margins undulate or revolute; bright-green and lustrous above, paler below and slightly rusty pubescent along the veins. A climbing, woody shrub.

It is through swamps that this supple high-climbing shrub is usually found upholding its pretty, often purplish-tinted leaves, and where in the autumn it becomes conspicuous through its abundant fruit.

INDIAN CHERRY. CAROLINA BUCKTHORN. (Plate CIII.)

Rhamnus Caroliniæna.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Buckthorn.	Greenish.	Scentless.	Florida to North Carolina and westward.	April-June. Fruit: September.

Flowers: very small; perfect; growing on a thick, axillary peduncle in rounded umbels. *Calyx*: campanulate, five-cleft. *Petals*: minute; obovate. *Stamens*: short. *Drupe*: black when ripe, sweet, rounded. *Leaves*: alternate, with slender pubescent petioles and minute, early falling stipules; elliptical, or broadly oblong, rounded or pointed at the base, finely and obscurely serrate, or entire; bright-green and lustrous, velvety pubescent along the veins underneath; deciduous. A shrub, or small tree.

Sometimes with the red maples, the Carolina buckthorn grows along stream borders and in low grounds from Tennessee and Kentucky to Florida and Texas. As a shrub even it becomes quite tall, and in western Florida is a slender, spreading tree about twenty-five or thirty feet high. Its sweet, cherry-like fruit is very good to the taste; but the plant seems to have the unfortunate, traditionary reputation of foreboding misfortune whenever dreamed about,



PLATE CIII. INDIAN CHERRY. *Rhamnus Caroliniana*,
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RED-ROOT. NEW JERSEY TEA.

Creanóthus Americanus.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Buckthorn.	White.	Scentless.	Texas and Louisiana northward.	May-July.

Flowers : crowded in small, umbel-like clusters which together form dense terminal panicles. *Calyx* : with five, rounded whitish lobes. *Corolla* : with five hood-shaped petals. *Stamens* : five. *Pistil* : one, with a three-lobed stigma. *Fruit* : three-lobed, and splitting at maturity in three carpels. *Leaves* : with short petioles; ovate, rounded, or subcordate at the base and mostly pointed at the apex; three-ribbed; finely serrate; paler and dingy pubescent underneath. A shrub, one to three feet high, with tomentose twigs which later become glabrous. *Roots* : dark red.

On the high Alleghanies, where the fleecy, pretty bloom of this plant is seen often in great masses, it is perhaps generally regarded as being useful. A bouquet would hardly ever be picked of it, for such in these parts is not the function of flowers. But in the autumn its dark red roots are collected, not only for the cinnamon coloured dye they yield, but also to be used as a curative for diseases of the spleen. Then in such enormous quantities do the mountaineers drink the decoction that by a native doctor I was told they often produce inflammation of that organ. This practice, although not its abuse, they seem to have learned directly from the Cherokee Indians. During the Revolution the leaves of the red-root were used as a substitute for tea by many of the troops.



THE GRAPE FAMILY.

Vitaceæ.

A group of climbing or erect shrubs with watery sap and simple, or compound, alternate leaves; and which bear small greenish flowers, growing in panicles, racemes or cymes. Fruit : a berry.

PEPPER-VINE, PINNATE-LEAVED AMPELOPSIS.

(Plate CIV.)

Ampelopsis arborea.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Grape.	Greenish.	Scentless.	Florida and Texas to Missouri and Virginia.	May, June. Fruit: September.

Flowers : very small; perfect; regular; growing in short cymose panicles. *Petals* : five, distinct, spreading. *Berries* : one quarter of an inch in diameter, black lustrous. *Seeds* : bony. *Leaves* : compound; twice or thrice pinnate; the

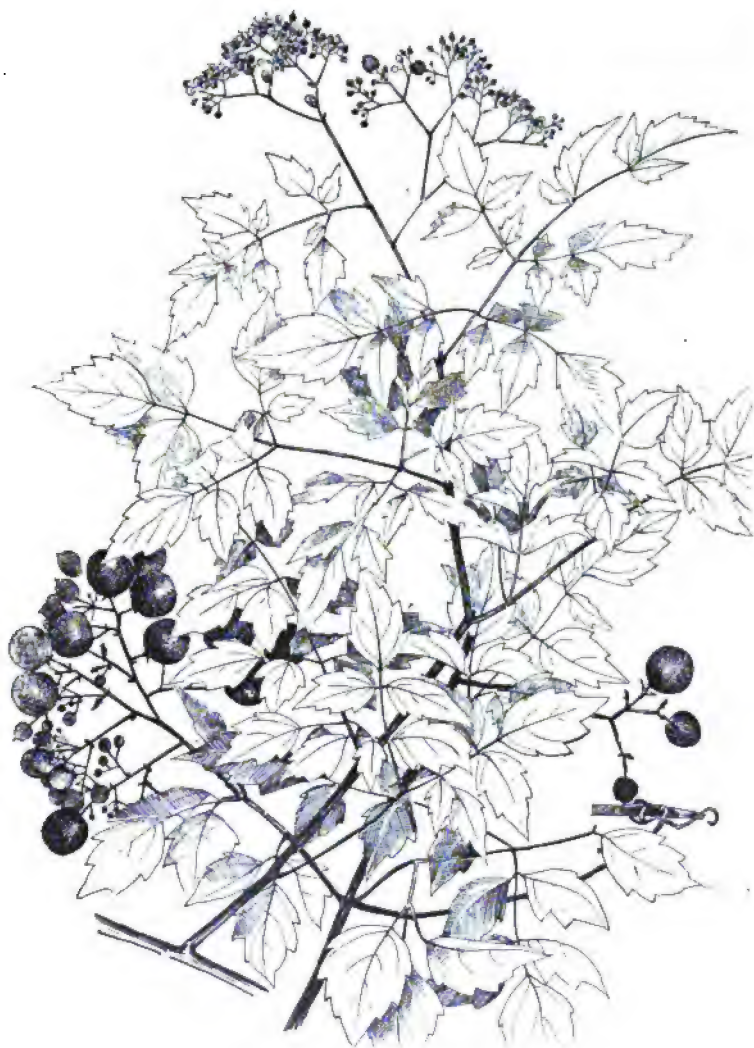


PLATE CIV. PEPPER-VINE. *Ampelopsis arborea*.
(331)

leaflets ovate, long pointed at the apex; mostly sharply and deeply serrate; bright green and lustrous above, very slightly pubescent on the veins below. An ascending vine.

Vigorous and strong as is mostly the growth of this plant, it can hardly be said to climb; frequently even it shows its inability to do so by being altogether without tendrils. This we notice the more as it is closely related to the Virginia creeper and the wild, or fox grape, *Vitis Labrusca*, which winds itself so delightfully about unresponsive objects and twines its stem in long falling loops. The fruit of the pepper-vine also, while attractive to the eye, is not at all good to eat.

A. cordata, simple-leaved Ampelopsis, on the contrary, is found climbing strongly over rock and tree by means of its long tendrils. Its large, simple leaves moreover are mostly heart-shaped.

Parthenocissus quinquefolia, Virginia creeper, American, or five-leaved ivy, designates the noble vine so abundantly seen throughout the south and which at times climbs by means of its lateral tendrils right to the top of very high trees. That it has five oblong-obovate leaflets, palmately arranged, should be remembered as a simple means of distinguishing it from poison ivy, which has never more than three.

At Blowing Rock, North Carolina, late in the autumn an abundance of this beautiful climber, then turned to deep and brilliant shades of crimson and abundantly hung with blue berries, had been brought in the hotel to decorate a doorway. Instantly a lively discussion arose among the guests as to whether or not it was poison ivy, and some remarkable stories were told of its power to work harm. It soon fell under the general ban of disapproval and was carried away regretted by few.



THE LINDEN FAMILY.

Tilidceæ.

Trees, herbs or shrubby plants with simple, alternate, rarely opposite leaves and axillary or generally cymose or paniculate flowers the plants being widely distributed in tropical or warm regions, and chiefly represented in our range by the genus Tilia.

WHITE BASSWOOD. BEE TREE. (Plate CV.)

Tilia heterophylla.

FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
Linden.	Rounded with tapering summit.	40-70 feet.	Florida and Alabama northward to Pennsylvania.	June, July.

Bark: dark brown; ridged vertically and separating into thin scales. **Leaves:** four to five feet long; slender petioled; rounded in outline, with abruptly pointed apex and squared or cordate base, one-sided; sharply and irregularly serrate; dark green; smooth and glossy above at maturity, silvery pubescent underneath, especially in the angles of the light coloured ribs. **Flowers:** cream coloured; fragrant; growing in cymes on long, slender peduncles that hang from a broad, membranaceous bract. **Sepals:** five, softly pubescent. **Petals:** five, narrow. **Stamens:** numerous and adhering in clusters to the petal scales or with each other in five sets. **Fruit:** greenish grey; round and resembling peas, the style and five-toothed stigma projecting from the top.

Perhaps the linden is more famed among the bee community than any other tree of our silva. Most assiduously they seek its fragrant, cream-coloured blossoms to gather nectar and then produce a honey which is highly regarded in Europe as well as in this country. Truly also it is a beautiful tree of high bred, refined expression. The seedlings, and by this term is meant those that have not yet reached a height of three feet, are unusually pretty, their leaves showing from the first little cotyledons that appear in several different outlines before settling down to their approved form. This species of *Tilia* although rare through northern forests is much chosen for planting and can readily be told from other American species by the silvery down on the undersides of its leaves.

The wood of the species just described is light brown, rather weak, but often used for similar purposes to those of the tulip-tree; and when the supply of red cedar shall have been exhausted, it may be chosen to take its place in supplying material for lead-pencils. A mucilaginous substance also is contained in the bark which natives in certain parts of the south make into a liniment for curing scalds and burns.

T. Americana, American linden, basswood or white wood, grows along river bottoms and in rich, moist woods from Georgia and Texas northward, and while bearing leaves almost identical in outline with those of the white basswood, are smaller and quite without the silvery-white, underlying pubescence which characterises the other.

T. pubescens, southern basswood, at most about fifty feet high, is very similar to *Tilia Americana*, and known from it by its smaller leaves which have often on both sides a dense pubescence while again they become almost glabrous above. The shoots of the southern basswood also are coated with woolly pubescence, at least during their early stages. Its very fragrant flowers are well known to the bees and its bark is used medicinally.



PLATE CV. WHITE BASSWOOD. *Tilia heterophylla*.
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THE MALLOW FAMILY.

Malvaceæ.

Shrubs or herbs, rarely trees, with alternate, mostly palmately-veined leaves, and flowers which are regular and perfect, with numerous stamens united about the pistil into a sort of column.

CLUSTERED POPPY MALLOW.

Callirrhæ triangulata.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Mallow.	Purple.	Scentless.	Alabama to North Carolina and westward.	June-August.

Flowers: growing sparingly in terminal panicles and having a three-leaved, rough and persistent involucre at the base. *Calyx:* rough, five-parted. *Corolla:* with five thin petals. *Stamens:* numerous; united into a column-like formation about the style. *Carpels:* hairy with kidney-shaped seeds. *Leaves:* with very long, roughly pubescent petioles; triangular-hastate, the upper ones smaller with three to five lobes, short-petioled, unequally crenate, or dentate. *Stem:* two to three feet high, ascending, branched above, purplish and roughly pubescent.

As flowers succeed one another, not in regular set gradations of size and form, but perhaps in gorgeousness, we find in mid-summer the mallows spreading their bloom. And about the whole genus from the largest member to the smallest there is an unmistakable look, a bond of union in the peculiar growth of the stamens about the style. Some of them are coarse, hairy and awkward, while others represent the most splendid of our wild flowers. This one grows in dry soil, and appears very showy with its purple, poppy-like flowers.

C. Papaver, a low, slender species, also with purple flowers, is found through the rich woods of Florida and Georgia. Its leaves are from three to five times parted into lanceolate divisions, toothed or entire. Occasionally about the flowers there is no involucre, and when present it has from one to three leaves.

VIRGINIA KOSTELETSKYA.

Kosteletskyia Virginica.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Mallow.	Pink.	Scentless.	Florida and Louisiana to New York.	July-October.

Flowers: growing in terminal, loose panicles. *Involucre:* with eight to nine thread-like, persistent bracts. *Calyx:* persistent; with five lanceolate segments. *Corolla:* with five delicate petals. *Stamens:* numerous, monodelphous, the col-

umn surrounding the style. *Carpels*: five, depressed, very rough, hairy and containing one seed in each cell. *Leaves*: those on the lower part of the stem ovate, pointed at the apex and cordate at the base; those at the upper part mostly hastate, lobed near the base; unequally dentate; rough and pubescent on both sides. *Stem*: erect, stout, branched, roughly pubescent.

Especially in the swamps near Wilmington, North Carolina, where is clustered such a wealth of flowers, does this plant with its delicate pink blossoms grow in great luxury. Were it not for the difference in their capsules it might readily pass for a Hibiscus, so like is it to them in general characteristics.

SCARLET HIBISCUS.

Hibiscus coccineus.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Mallow.	Scarlet.	Scentless.	Florida and Georgia westward.	July, August.

Flowers: large; very showy; often six to eight inches in diameter; solitary, or a few growing in a terminal cluster. *Calyx*: with five long, ovate, pointed sepals, and having underneath a row of twelve linear-pointed bracts. *Corolla*: with five, broadly-obovate, long-clawed petals, rounded at their apices and becoming deep magenta at the base where they are slightly ciliate. *Stamens*: numerous; monodelphous, forming a column-like formation about the style, from all sides of which the anthers are borne near the summit. *Style*: one, with four divisions above the column. *Capsule*: globose, or oblong; five-celled, containing many pubescent seeds. *Leaves*: with long, smooth petioles, ovate, and palmately divided into three to five linear-lanceolate segments, pointed at their apices and remotely toothed; glabrous. *Stem*: four to eight feet high; smooth; glabrous.

In deep, almost inaccessible marshes near the coast and raising itself higher than rushes, tall and thrifty, there opens to the sun in late summer the great glorious bloom of the scarlet hibiscus. Like a small ball of fire it then appears from afar as surrounded by an intense greenness, and produces in fact a startling tropical effect wherever it grows. Even more beautiful it is through the brilliancy of its colour than the better known rose mallow, *Hibiscus Moscheutos*.

H. grandiflorus, the great flowered member of the genus, is often crowned with blossoms as wide as twelve inches. They are pale rose colour, becoming deep red at the centre and fairly transform in July the marshes along the coast. Truly then the plant appears an astonishing wild flower. Its leaves are known by being rounded ovate, long pointed, lobed and deeply toothed and velvety to the touch especially on the lower side. The flower's calyx also is soft, like velvet.

H. Moscheutos, rose mallow, or swamp mallow, bears a flower which, while smaller, resembles closely the preceding species. In August it blooms through swamps, and often side by side with the pink form will be



PLATE CVI. SCARLET HIBISCUS ON ST. JOHN'S RIVER.

While accustomed to seeing masses of lordly coreopses lining its banks, and in profusion sennas through which even the tender jewel-weed shone ; it was unexpected, for its season was nearly over, to find the scarlet hibiscus blowing radiantly from lands along the St. John's river. Astonishingly gay was its fire-like face, and as well guarded from the hands of timid mortals as though it had been a flame. For through this intense maze of verdure, tall palm trees and grey moss, stories of snakes are more abundant than plant-lore, the much desired. We shuddered even to think of treading in the soggy unknown.

(CVI.)

seen a white one spotted deeply at its petal's bases with magenta. The leaves are ovate, or ovate lanceolate, often three lobed above the middle. From Florida to Massachusetts it occurs westward to Louisiana and Ontario.

H. aculeatus flaunts a rather coarse style of beauty, and nearly all its parts are covered with white, glass-like bristles, fine and sharp. They even occur on the outer sides of the lemon-yellow petals which at their bases become deep magenta. Mostly these flowers grow in an axillary way, and it is noticed that their underlying bracts have a tendency to become forked near the apex.

In Florida especially, and through the south, there are many other Hibiscus to be seen than those which have been mentioned. The flowers of these vary from very small ones to those about two inches wide, or again we see the great flowered ones.

Among common weeds also that have been introduced into this country and members of the mallow family we find growing by fences and along waysides Abutilon Abutilon, bearing small yellow flowers, and the better known Malva rotundifolia with graceful, rounded leaves and small, bluish purple flowers which later produce the parcheeses eaten and beloved by children.

As examples of the family seen in cultivation is the beautiful rose of Sharon, Hibiscus syriacus; the cotton plants, Gossypium, in species and varieties, and the okra, Hibiscus esculentus. Of this last, as well as being a vegetable of importance, it is known that its stems furnish fibres which, like those of ramie and jute, are capable of being woven into fabrics.



THE TEA FAMILY.

Theaceæ.

Trees, or shrubs with simple mostly alternate leaves and bearing large, regular and mostly perfect flowers in either an axillary, or terminal inflorescence.

MOUNTAIN STUARTIA. ANGEL-FRUITED STUARTIA.

Stuartia pentágyna.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Tea.	Cream-white.	Scentless.	Georgia and Alabama to North Carolina and Kentucky.	May-July.

Flowers: large; solitary; axillary. *Calyx:* with five lanceolate and hairy sepals. *Corolla:* with five large obovate petals, uneven about their edges.

Stamens: numerous. *Styles*: five. *Capsule*: ovoid; hairy and opening in five sections. *Seeds*: margined with wings. *Leaves*: alternate; ovate or oval, taper-pointed at the apex and pointed, or rounded at the base; ciliate about the margins and projecting remote bristles; bright-green above and glabrous, lighter below and pubescent. A shrub six to twelve feet high with greyish brown branches.

It seems strange that a shrub so bold and striking and fairly enchanting when in blow as the mountain *Stuartia* should be so little known by the country people through its range. Along the southern exposures of the Blue Ridge, where sometimes it is fairly covered with large white flowers looking like single camelias the mountaineers have apparently no knowledge of its existence. It is also rarely seen in cultivation, although it is hardy, as far northward as New England. The *Stuartias* and *Gordonias* are, moreover, the only relatives in this country of the important tea plant.

S. Malachodendron, round-fruited *Stuartia*, is a large shrub about twelve feet high, and bears also beautiful creamy white flowers, the petals of which have on them numerous silky white hairs. Its foliage is considerably smaller than that of the other, and a specific difference is that its seeds are without margins. It grows also in woods from Louisiana and Florida to Virginia, and for one place is found about Summerville, S. C.

LOBLOLLY BAY. TAN BAY. (Plate CVII.)

Gordonia lasianthus.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Tea.	White.	Slightly fragrant.	Florida to Virginia.	May-July.

Flowers: large; solitary at the ends of long, smooth axillary peduncles. *Calyx*: with five orbicular, silky sepals, ciliate on the margins. *Corolla*: with five large, rounded petals, ciliate and softly pubescent on the outside. *Stamens*: numerous, cohering in clusters to the bases of the petals. *Pistil*: one; stigma, five-divided. *Fruit*: a woody, ovoid capsule. *Leaves*: alternate; oblanceolate; bluntly pointed at the apex and tapering at the base into short margined petioles; serrate, becoming entire at the base; thick, like leather; smooth on both sides; evergreen. A tree forty to seventy feet high.

As the loblolly bay raises its slender pyramidal form amid swamps hung with an over-heated thick growth, and where mostly the tillandsia and amber lights of the setting sun are reflected in the water, it covers itself in mid-summer with pure white blossoms, waxy and faintly fragrant. They are very like camelias, and the trees have about them somewhat the same charm as magnolias laden with bloom. They seldom grow in swamps further away than a hundred miles from the coast, although occasionally they inhabit low moist woods. The wood they produce is of fine quality but much too brittle to be of any real service, and the readiness of the limbs to break often causes these plants to look scraggly when old.

G. Altamaha, *Franklinia* (Plate CVIII), is especially interesting to us, it



PLATE CVII. LOBLOI LY BAY. *Gordonia lucianthus*.

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being at present a lost species. And although yearly it is searched for by those who would cover themselves with glory as did the rediscoverers of shortia, it still remains unresponsive to their efforts and enthusiasm. From the loblolly bay it is distinguished by its deciduous leaves which appear to grow less thickly along the branches ; its flowers which are almost sessile, or occur on thick pedicels hardly an eighth of an inch long ; and the dense velvety pubescent which for a long time clings to the undersides of the young leaves.

Concerning its history we know that in 1765 it was discovered along the Altamaha River in Georgia by John Bartram. It there grew with *Pinckneya pubens*. Its common name was bestowed on it by John Bartram and his father in honour of Benjamin Franklin. It was visited later by Marshall and other botanists. But since 1790 no one has seen it growing in a wild state. At Fairmount Park in Philadelphia there are still a few representatives, and the plant from which the accompanying sketch was taken is now in cultivation at Biltmore.



THE ST. JOHN'S-WORT FAMILY.

Hypericaceæ.

In our species shrubs, or herbs with simple, opposite, rarely whorled and entire leaves, black dotted; and which bear regular, terminal, or axillary flowers with numerous stamens usually in sets of three or five inserted on the receptacle ; the flowers being mostly yellow and with their parts in fours or fives.

MOUNTAIN ST. JOHN'S-WORT.

Hypêricum graveolens.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
St. John's-wort.	Pale yellow.	Scentless.	Virginia and North Carolina.	July, August.

Flowers : large ; growing on pedicels in both lateral and terminal cymes. *Calyx* : with five lanceolate, short sepals. *Corolla* : with five oblong petals usually rounded at the apices. *Stamens* : numerous. *Styles* : three, long, slender, separate. *Capsule* : ovoid, three-celled, with many seeds. *Leaves* : opposite ; sessile or clasping, oblong-ovate, blunt, at the apex ; entire ; thin ; smooth ; black dotted. *Stem* : one to three feet high ; very leafy ; smooth.

This high mountain plant with its fluffy flowers and often very yellow looking leaves presents us with one type of the great family, St. John's-



PLATE CVIII. FRANKLINIA. *Gordonia Allamaha*.
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wort, wherein there are over two hundred known species. It is rather a rare one, keeping mostly to such mountainous parts of its range as the summits of Craggy and Roan, where in the estimation of the country people it passes as a St. John's-wort pure and simple. It was Buckley who first made its peculiarities known.

H. maculatum, spotted St. John's-wort, grows well in the moist soil of low grounds or pine-barrens, and is rather general from Texas to Maine. It shows a stiff stem much branched above, bearing oblong or ovate-lanceolate clasping leaves which are quite smooth and conspicuously dotted. The flowers are small, but many of them are produced in corymb-like cymes and their petals are dotted with black.

H. perforatum, common St. John's-wort, is often a troublesome weed with a stem branching from the base and bearing many small linear-oblong, sessile leaves mostly blunt at their apices. Its abundant flowers produced in cymes near the summit are from one-half to an inch broad, vividly yellow and have their petals slightly dotted with black. It is not a native but through our fields has become abundantly naturalised and pursues a rather unscrupulous course of rapid soil exhaustion.

It is perhaps the member of the family which in Europe has been so universally credited with the power of preserving people against lightning and knowing the intentions and whereabouts of witches. Many women in Germany wear it in an amulet about their necks, so that on St. John's eve they may be saved from the spirits then wandering about with evil in their eyes. Both in England and Germany it is hung over the doors and windows on the same night that the devil may be prevented from entering, while many fear to tread on it fearing they should be surrounded and borne away by fairies. It is also known as the wonderful herb, the panacea for all wounds. Early it was called "balm-of-the-warrior's wound," while the dew which fell on it the eve of St. John was believed to preserve the eyesight. Its blood-like spots even were credited with appearing more plainly on the leaves on the anniversary of the apostle's decapitation.

ST. JOHN'S-WORT. (Plate CIX.)

Hypericum aureum.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>St. John's-wort.</i>	<i>Deep yellow.</i>	<i>Scentless.</i>	<i>Middle Georgia southward and westward.</i>	<i>June-August.</i>

Flowers: very large; showy; mostly solitary, at the ends of the two-edged branches. *Calyx*: with five leaf-like bracts. *Corolla*: with five, broadly rounded, thick petals. *Stamens*: infinite in numbers. *Leaves*: narrowly oblong, blunt at the apex and tapering at the base; smaller leaves showing in their axils; entire, or wavy along the edges; glabrous; pelucid dotted underneath and glaucous, with smooth, greyish brown bark inclined to peel in shreds.

It was the younger Bartram who in Georgia first discovered this plant, and in referring to the circumstances he thus designates it: "A species of shrub *Hypericum* of extraordinary show and beauty; the showiest one in flower of the whole genus."

Through the Arnold arboretum it has been introduced into cultivation and has proved itself of great value as an ornamental shrub. Linger- ing late in the autumn its golden flowers appear like miniature fallen suns.

H. fasciculatum, of altogether a different personality, grows in shallow water or along the margins of pine-barren ponds from Florida to North Carolina westward to Texas and stretches upward sometimes to eight or ten feet high, looking like a tiny tree. Its flowers are small and deep yellow. The leaves, however, are even more attractive. In little fascicles they grow, appearing verticillate; are very narrowly linear, revolute and sessile. Always they are very bright and in drying turn to rich brown, or burnt orange.

H. prolificum, shrubby St. John's-wort, noticeable from its very numerous protruding stamens which give to the deep yellow bloom a fluffy, light look and render it unusually attractive, although the flowers are not produced in such profusion as in the next species. Very thickly on the branches grow the oblong, lanceolate leaves.

H. densiflorum, dense-flowered St. John's-wort, sends forth its flowers in great numbers in both terminal and lateral cymes. It is distinguishable from the shrubby St. John's-wort by its smaller, more numerous flowers, and smaller more crowded leaves. In cultivation as a decorative bushy plant it is favourably regarded.

BUCKLEY'S ST. JOHN'S-WORT.

Hypericum Buckleii.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>St. John's-wort.</i>	Yellow.	Scentless.	Georgia and North Carolina.	June.

Flowers: terminal; mostly solitary. *Calyx:* with five greenish, persistent sepals. *Corolla:* with five petals. *Stamens:* numerous; exerted, persistent and drying about the fruit. *Capsule:* divided into three sections. *Leaves:* small; ovate or oblong, rounded at the apex; entire; bright-green above, lighter below. A small branched shrub. Six to twelve inches high.

Since the time of Buckley this plant it is thought has not been found in Alabama, although the state has been at times crossed and recrossed by collectors who have had the finding of it among their desires. On high, rocky cliffs among the mountains of North Carolina, however, it thrives abundantly, but is one that will not do well when taken away and sur- rounded by the influences of cultivation. It was by Dr. M. A. Curtis, an



PLATE CIX. ST. JOHN'S-WORT. *Hypericum aureum*.
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old-time botanist of the south and whose field was the low country, that the plant was named. He undoubtedly appreciated Buckley's ardour in plant finding and some of his struggles and disappointments. Since his death, however, Professor Sargent is one who has tried to accord to him his true place in the world of science.

There are besides those of this large genus that have been mentioned several other common individuals which come prominently to the attention of those seeking flowers. Among them are seen very often :

Ascyrum hypericoides, the little plant commonly known as St. Andrew's cross, and which in summer crops up so frequently in dry soil or in pine-barrens. It is a low plant, spreading well over the ground, and has received its popular name because its four oblong and yellow petals spread out in the shape of the cross of Saint Andrew. The sepals are oval, and as the stamens, shorter than the petals. Its numerous small leaves are oblong, or obovate, rounded at the apex and narrowed at the base.

A. amplexicaule is much more pretentious in personality than the St. Andrew's cross, it being a shrub of from two to three feet high and bearing flowers quite large and showy. It grows erect, the branches forking many times near the summit, and contrary to the habit of the foregoing species its leaves are ovate-cordate and clasping. From Florida it occurs through Georgia and westward.

Sarothra gentianoides, pine-weed or orange grass, is the wiry, grass-like looking little plant with minute leaves which occurs in sandy fields over a very extended range. In a scattered way its tiny deep orange flowers grow along the filiform, erect branches.

Triadenum Virginicum, marsh St. John's-wort, occurs mostly in bogs and swampy places. It bears pale, pinkish flowers on short, bracted peduncles and has ovate or oblong leaves, cordate and clasping at their bases and obtuse at the apices. On their lower surfaces they are much dotted.

T. petiolatum, larger marsh St. John's-wort, bears its rose-coloured flowers in nearly sessile clusters, while its oblong leaves narrow into very short petioles at their bases. Through the low country it is an inhabitant of swamps.

THE ROCK-ROSE FAMILY.

Cistaceæ.

Low shrubs or woody herbs with simple, alternate, or opposite leaves and regular flowers which grow solitary, or are produced in racemose, clustered, or paniculate inflorescences.

ROCK-ROSE. SUN ROSE.

Helianthemum Caroliniænum.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Rock-rose.	Yellow.	Scentless.	North Carolina to Florida and Texas.	March, April.

Flowers: quite large, one inch across; showy; perfect; mostly solitary and terminal. *Calyx*: with five sepals of which the two outer ones are smaller than the three inner ones. *Petals*: five, spreading. *Stamens*: very numerous, with short filaments. *Stigma*: capitate, three-lobed. *Leaves*: alternate; obovate to lanceolate or oblong, pointed or rounded at the apex and nearly sessile or tapering into very short petioles at the base; entire or denticulate pubescent on both surfaces. *Stem*: four to twelve inches high; ascending, villous, pubescent.

Differing from some others of its genus this pretty little plant bears bright, gay flowers which are all alike. They blow out early in the season and soon quite in the orthodox way set about the forming and maturing of their seeds. The leaves before they perish in the autumn turn to a charming bright red.

H. corymbosum, pine-barren frost weed, grows also in sandy barrens and in places along the coast from Louisiana and Florida to North Carolina. It is one which bears two kinds of flowers. Early in April those with petals and very pretty unfold in cymes. Then later in the season the plant blooms again, producing this time small, inconspicuous flowers in almost sessile, cymose clusters. They have no petals, and while they mature seeds as do the larger flowers, they are not more fertile, for their capsules are neither so large nor so well filled. Their calyxes, the leaves, and the plant's shrubby stems are all covered with a hoary pubescence.

HUDSONIA.

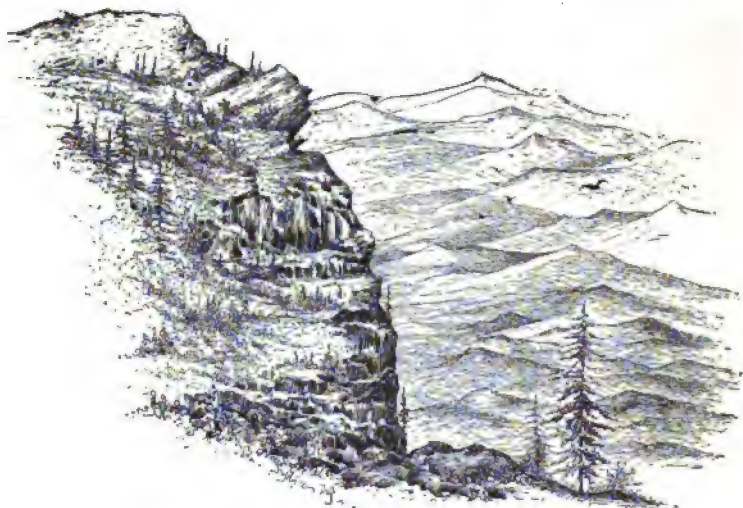
Hudsonia montana.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Rock-rose.	Burnt orange.	Scentless.	North Carolina.	May, June.

Flowers: relatively large, growing on slender minutely pubescent peduncles at the ends of the branches. *Calyx*: campanulate with five ovate-oblong, pointed, hairy sepals. *Petals*: five, obovate-oblong. *Stamens*: numerous. *Styles*: thread.

like. *Leaves*: loosely imbricated, scattered along the branches; needle shaped; sharply pointed; minutely pubescent. A low, tufted shrub two to four inches high, branching from the base.

On one or two mountain tops in North Carolina this quaint little plant blooms freely. Of the three species which are natives of North America it



is the most rare and its habitat the most restricted. On Hawk's Bill and Table Rock, that quaint, flat peak, of aspect so different when seen from various neighbouring high points, it forms in its heather-like way a close, often interwoven growth, turning thus to a carpet of green, rocky, jagged places, and retaining its freshness until late in the season, when gaunt pines are perhaps all that have not shed their leaves.

H. ericoides, a more northern species, although extending to Virginia, is sometimes seen in cultivation as a rock garden plant.



THE VIOLET FAMILY.

Violaceæ.

Chiefly herbs with simple, alternate, stipulate, or basal leaves with margins entire, or variously cut or lobed; and which bear irregular, nodding flowers growing on bracted peduncles,

ARROW-LEAVED VIOLET. (Plate CX.)

Viola sagittata.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Violet.</i>	<i>Deep blue.</i>	<i>Faintly fragrant.</i>	<i>Texas and Georgia northward.</i>	<i>April, May.</i>

Acaulescent flowers: nodding at the ends of long scapes. *Calyx*: with five linear, lanceolate sepals projected as ears at the base. *Corolla*: with five unequally shaped petals, all bearded with the exception of the lower one which at the base is spurred. *Stamens*: five, short, connivent about the pistil. *Leaves*: from the base with long, slightly pubescent or glabrous petioles, lanceolate-sagittate, pointed at the apex, entire, or crenate-dentate and having the spreading basal lobes toothed or incised; glabrous; thin.

The violets are very temperate. They like neither much heat nor great cold but seek to grow usually in retired places, well shaded and moist. About them there is a look that makes a violet always a violet. There are, however, many species among them, and almost every year greater stress is being laid on their dissimilarities. A primary point to notice always is whether they have the so-called leafy stems, or whether they belong to the stemless group,—that is whether the scapes and leaves all shoot up from the base. The leaves of this species, so different from those of the common violet, make it at once distinctive and interesting. It bears, moreover, and very abundantly, cleistogamous flowers which arise on erect peduncles. These apetalous little blossoms are most interesting to watch during a season. They seem mostly to be produced when the days become too warm for the showy flowers to bloom, and occasionally late in the autumn we can see them by close watching transformed into the regular flowers which we then regard as a second crop.

V. palmata, early blue violet, commonly occurs through rich woodlands. Its dark purple flowers are associated with large variously lobed, lanceolate, ovate or oblong leaves, mostly crenate-dentate, or, when young, sometimes entire. The plant is pubescent and belongs to the group of stemless violets. Its lateral petals are bearded. It is perhaps the one more generally known than any other as an inhabitant of upland woods. In the autumn sometimes as late as November a second crop come forth, stretching thus the sense of spring into the very palm of winter. These are the violets which generally in parts of the south are called "little roosters," while the blossoms of the bird's-foot violet are designated as "big roosters." Often the young people take them as opponents and fight them in the way of game cocks until one or the other has lost its head.

V. ovata, ovate-leaved violet, a rather low, hairy plant, is further charac-



PLATE CX. ARROW-LEAVED VIOLET. *Viola sagittata*.
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terised by its ovate, or ovate-lanceolate crenate leaves, deeply cordate at the base, where also they are often coarsely toothed. Its flowers growing on scapes arise usually higher than the leaves, are rather small and bloom early in April.

V. vicindlis, a showy member of the genus and found in the pine barrens of northern Florida and southern Alabama, also belongs to the group of stemless violets. In early youth its flowers are raised to a considerable height above the leaves, but later in the season these latter attain to larger size and are not exceeded by the peduncles. The blades in outline are very distinctive, being deeply and irregularly divided into from three to five lobes of which the central one is the largest. The deep purple and large blossoms have their lateral petals bearded with white and lustrous hairs. This distinct violet supplants *V. palmata* in Florida, and slightly resembles that species.

BIRD'S-FOOT VIOLET.

Viola pedata.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Violet.</i>	<i>Deep purple.</i>	<i>Faintly fragrant.</i>	<i>Florida to North Carolina northward.</i>	<i>May.</i>

Acaulescent flowers: large; nodding at the end of bracted scapes. *Calyx*: with five pointed sepals eared at their bases. *Corolla*: of five unequal petals, being beardless and one extending into a spur. *Stamens*: connivent about the style. *Pistil*: one; style, club-shaped. *Leaves*: from the base with long petioles; pedately divided into five to nine linear-lanceolate or spatulate lobes, entire or toothed.

Perhaps there is no violet which presents more varieties of form than this one known as the bird's-foot from the outline of its leaves. Sometimes its petals are all one colour, pale blue, or blue tinted with pink, and again the two uppermost ones are a rich and velvety purple. In this latter event the plant is usually known as the variety *bicolor*, although Dr. Britton considers this form the type of the species. At Highlands, North Carolina, I saw a large patch of this species of violet wherein so many unusual forms were gathered that they fairly upset all preconceived notions concerning them and made one long to be a violet specialist.

On Satula Mountain also as late as the first week in September I gathered several of these blossoms, as large and fresh as they could ever have been in the early season. In Japan they would no doubt have been called "returning flowers" and given to those starting on a journey to typify a safe return. It is not the custom of this species to bear cleistogamous flowers, nor is it stoloniferous.

V. rotundifolia, round-leaved violet, sometimes begins to bloom as early

as March in North Carolina, and from there its range extends to the far north. It is a rounded-leaved species, the leaves often three inches in diameter, with crenate edges, and growing in mid-summer to their utmost size as they lie flat on the ground. They are then very lustrous. The pale yellow flowers which appear when the leaves are relatively small have noticeably short spurs, and the lateral petals are bearded and veined with brown.

It is now conceded that it was this plant which inspired the poet Bryant to write, "The Yellow Violet."

V. blanda, sweet white violet, is very small, the whole plant being when found on such high mountains slopes as Pisgah in North Carolina not over two inches high and seldom under the most favourable circumstances, in moist meadows or near swamps, raising itself higher than six inches. Its white baby face with delicate veinings of purple is well known, as is also its subtle fragrance. Quite of the conventional type are its leaves, orbicular or reniform and deeply cordate at the bases.

V. lanceolata, lance-leaved violet, is one of the dainty little white violets which we find among the grass of moist soil very early in the spring. Its slender lanceolate leaves, tapering as they do into long petioles, serve always as a mark for its identification, and the small white corolla delicately lined with brown exhales a faint fragrance often not noticed in other species.

HALBERD-LEAVED YELLOW VIOLET. (Plate CXI.)

Viola hastata.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Violet.</i>	<i>Bright yellow.</i>	<i>Scentless.</i>	<i>Alabama and North Carolina to Pennsylvania and Ohio.</i>	<i>April, May.</i>

Flowers: small, nodding from peduncles which grow from the upper axils of the leaves. Lateral petals slightly bearded, the lowest one veined with purple. *Spur:* short. *Leaves:* growing on the stem mostly near the summit and having entire or sparingly toothed stipules; halberd-shaped or hastate-ovate, acute; irregularly dentate or repand. *Stem:* six to twelve inches high.

As can readily be seen from the illustration this violet is of the leafy-stemmed type, and those that follow will also be of the same class. It is found in woods or by the cool borders of streams in upland country, and has lustrous, thin foliage veined with bronze. Often also the undersides of its leaves are conspicuously of this colour. Botanically it is closely related to *Viola pubescens*, the hairy yellow violet.

V. Canadensis, Canada violet, one of the most notable of all the leafy-stemmed violets, grows over an extended range and occurs frequently as tall as fifteen inches. Its stem upholds broadly ovate leaves which taper at the apex, are deeply cordate at the base and have moreover lanceolate stipules.



PLATE CXI. HALBERD-LEAVED YELLOW VIOLET. *Viola hastata*.
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From the axils the fragrant flowers grow on bracted peduncles and are generally spoken of as white violets. Many of them, it is true, are spotlessly white, being marked only with deep purple veinings, while again on the same plant are sometimes others of pinkish lavender lined with white. It favours always cool situations and produces only these large, showy flowers, never those that are cleistogamous.

V. rostrata, long-spurred violet, grows up from a fibrous root and bears both basal and stem leaves. It is considerably branched, and usually the graceful foliage is cordate in outline, or the lower leaves, reniform. Their stipules are noticeable, being lanceolate and having fine teeth towards their bases. Either pale violet, or white veined with deep blue are the flowers. They are moreover beardless, and the lower petal projects a spur equal to its own length.

V. tripartita, a yellow bloomer among the leafy-stemmed violets and one of full, luxurious growth, bears in its typical form large and thrice-divided leaves which are sparingly pubescent underneath. It is occasionally found, however, with simple leaves. When this latter is the case it is not an easy matter for the amateur to distinguish such specimens from other closely related species.

V. scabriuscula, downy yellow violet, occurs as a sparingly pubescent plant with broadly cordate leaves serrate about their margins, and which have stipules large and mostly entire. Its dainty yellow flowers are faintly fragrant, and are produced soon after the basal and stem leaves have developed.



THE PASSION-FLOWER FAMILY.

Passifloracææ.

In our species vines climbing by means of tendrils and with alternate, usually palmately-lobed leaves; and which bear regular, perfect flowers in solitary or clustered axillary inflorescences.

PASSION-FLOWER. MAY-POP. (Plate CXII.)

Passiflora incarnata.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Passion-flower.	Purple and white.	Faintly fragrant.	Florida to Virginia and westward.	June-September.

Flowers: large; and subtended usually by three small bracts. *Calyx:* campanulate, the divisions consisting of five long sepals, somewhat united and col-



PLATE CXII. PASSION FLOWER. *Passiflora incarnata*.
(353)

oured inside. *Corolla* : with five slender petals borne on the throat of the calyx; also on the calyx-throat, a full thread-like fringe called the corona. *Filaments* : monodelphous below. *Anthers* : five, attached near the middle. *Styles* : three to four, club-shaped, spreading. *Leaves* : alternate; with long, pubescent petioles; almost orbicular and thrice deeply lobed; somewhat cordate at their bases; finely serrate; thin; smooth or slightly pubescent. *Stem* : climbing by means of lateral tendrils; smooth.

So unlike the majority of wild flowers is this one that it seems strange through the south to see it climbing up and down the rail fences bordering fields of corn or those of sorghum, or again embellishing railway embankments and winding in and out its fantastic blossoms, long thought to be emblematic of the passion of our Lord. Despite its gorgeous bloom, however, the people in many places regard mostly its leaves and call it "ground ivy," thinking them to resemble those of that vine. They pick them also for the purpose of brewing as tea, and children frequently gather and eat the large fruits which are known as May-pops.

P. lutea, yellow passion flower, is distinguished by its very small greenish yellow flowers and its obtusely thrice and spreading lobed leaves.



THE LOOSESTRIFE FAMILY.

Lythraceæ.

Trees, or shrubs, but usually herbs, mostly with opposite leaves and perfect flowers which are solitary or grow in axillary clusters.

SWAMP LOOSESTRIFE. SWAMP WILLOW-HERB.

(Plate CXIII.)

Decodon verticillatus.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Loosestrife.</i>	<i>Pinkish purple.</i>	<i>Scentless.</i>	<i>Florida northward and westward.</i>	<i>July-September.</i>

Flowers : growing in cymes in the axils of the leaves. *Calyx* : campanulate, five to seven-toothed. *Corolla* : with slender petals wedge-shaped at the base. *Stamens* : of different lengths, slender, exserted. *Leaves* : mostly whorled in threes about the stem; lanceolate, tapering at the apex and into short petioles at the base; entire, rather thin; paler below than on the upper surface and slightly pubescent. *Stem* : somewhat woody; angular.

Perhaps the most interesting of the loosestrife family is this herbaceous or shrub-like plant which seeks its home in water or very wet, muddy places, and where its stems reroot themselves from their tips whenever they



PLATE CXIII. SWAMP LOOSESTRIFE. *Decodon verticillatus*.
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grow long enough to touch the water. They further show at their bases the peculiarity of being clothed with a soft pinkish covering, which when pulled peels in layers as would limp paper. As those of its European relative, the purple spiked loosestrife, the flowers are trimorphous,—occurring under three forms—that is the filaments and styles on different flowers are reciprocally shorter and longer, and in order that fertilization may be accomplished the stigma must only be touched with pollen from a stamen of equal length with itself and produced in another flower. This device is simply one of various plants used to guard against self-fertilization. The genus of the swamp loosestrife is monotypic.

Besides other common representatives of this family which lack of space forbids entering in these pages, there is seen through the southern cities the crepe myrtle tree, *Lagerstroemia indica*. Originally it has been imported from eastern Asia. When well grown and hung with its deep pink, crinkly bloom it is very beautiful.



THE MEADOW-BEAUTY FAMILY.

Melastomaceæ.

In our species herbs with opposite, simple leaves ; and which bear perfect, regular flowers, often showy and generally growing in clusters.

MARYLAND MEADOW-BEAUTY. (Plate CXIV.)

Rhèxia Mariàna.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Meadow-beauty.	Magenta-pink.	Scentless.	Texas and northward.	June-September.

Flowers: showy; growing in loose, terminal cymose clusters. *Calyx:* long; urn-shaped; pubescent; with four short, pointed lobes. *Corolla:* with four, rounded petals, occasionally projecting a minute point or bristle. *Stamens:* eight, with linear, incurved anthers. *Leaves:* oblong, or linear-lanceolate, bluntly pointed at the apex and tapering at the base into short, hairy petioles; serrate; ciliate; three-nerved; bright green and showing on both sides a number of scattered hairs. *Stem:* ten inches to two feet high, mostly branched; erect; hairy.

Among the wild flowers this genus holds many beauties of the meadow; beauties of a delicate, quaint type, not at all disposed to vie with lordly lilies or magnificent mints. A number of them have more the look of



PLATE CXIV. MARYLAND MEADOW-BEAUTY. *Rhexia Mariana*.
(357)

small evening primroses, and possess a characteristic trait in the curving of their unusually long anthers. There is an upward toss to their heads as though they had an aversion to drooping, and while some of them have to be sought amid the grass of moist meadows, others occur along the roadsides, seeming to follow one all the way. The Maryland meadow-beauty grows through the swamps of pine-barrens and in the autumn becomes most noticeable when its calyx has turned to deep red.

R. ciliata, ciliate meadow-beauty, another swamp species which occurs from Florida and Louisiana to Maryland and westward, is tall, abundantly leafy and rather coarse looking with the exception of its delicate deep magenta bloom, the pedicels of which are very short. Its ovate leaves have bristly ciliate margins, while the calyx is glabrous, having only a few bristly hairs on its lobes.

R. glabella, a most beautiful individual with large, deep magenta and very showy flowers, may be found in the low pine-barrens of Florida, or as far northward as North Carolina. It grows quite high, at most about three feet and is throughout very smooth. Its lanceolate, sessile leaves point upward and have about them quite a sweet odour.

R. lutea flaunts a corolla so brilliantly yellow or orange that one forgets to look at its anthers, usually so conspicuous a feature of the meadow-beauties. They are, however, short and in any case would not be very noticeable. Usually the gay petals are persistent, longer than those of other species, and the foliage, lanceolate or obovate in outline, is more bronze and golden than it is green. From the base the plant branches, sending up four-angled hairy stems which become often a foot high. Its range is from Florida to North Carolina and westward.

R. filiformis, in Florida and Georgia, opens in August its dainty pale purple or white flowers, and deeply tinted are the anthers which curve as gracefully as crescents. The foliage is abundant; the little leaves being narrowly linear, or threadlike and only on the stems are to be seen fine, bristle-like hairs.

Among the meadow-beauties it is a new species of Dr. Small, who about it has written: "While collecting along the southern border of Georgia, I met this delicate little species of *Rhexia* at various places."

The truly common species, distributed well over the country, is *Rhexia Virginiana*, meadow-beauty, or quite as frequently called, deer grass.

THE EVENING-PRIMROSE FAMILY.

Onagraceæ.

Mostly herbs with simple, alternate or opposite leaves, and which bear perfect regular flowers, solitary or in various inflorescences, their calyxes being adnate to the ovary, or often extending beyond it into a tube.

FLOATING JUSSIÆA. PRIMROSE WILLOW. (Plate CXV.)

Jussiaea repens grandiflora.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Evening-primrose.</i>	<i>Yellow.</i>	<i>Fragrant.</i>	<i>South Carolina and westward.</i>	<i>May, June.</i>

Flowers : large ; nearly two inches broad ; solitary at the ends of long axillary and pubescent peduncles. *Calyx-tube* : elongated, with five long lanceolate and pointed lobes pubescent on the outside. *Corolla* : with five-rounded and delicately nerved petals. *Stamens* : eight, short, on the tube. *Style* : thick. *Leaves* : alternate ; linear-oblong, or lanceolate, pointed or blunt at the apex and tapering at the base into short margined petioles ; entire ; feather-veined and covered along the midrib, both above and below, with fine hairs. *Stem* : creeping at the base and rooting extensively from the nodes.

Lifting their heads above shallow water these flowers look like exquisite pale yellow cups, or even poppies that have lost their way. Often their stems are marked with bright red and as they creep along root freely from the nodes. Mingled with water lilies or the great lotuses, they are now beginning to be much seen in cultivation.

COMMON EVENING-PRIMROSE.

Onagra biennis.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Evening-primrose.</i>	<i>Yellow.</i>	<i>Fragrant.</i>	<i>General.</i>	<i>June-September.</i>

Flowers : often two inches broad ; growing in leafy spikes, which in fruit become elongated. *Calyx* : with elongated tube and four hairy, reflexed lobes. *Corolla* : with four obcordate petals, veined with green. *Stamens* : eight. *Pistil* : one ; stigma, four-branched. *Capsule* : cylindrical ; sessile ; four-valved, hairy. *Leaves* : alternate ; lanceolate ; tapering at the base and sessile ; or the lowest petioled ; entire, remotely serrate or toothed ; thick and covered with a whitish pubescence. *Stems* : erect ; two to nine feet high ; mostly simple ; pubescent.

Everywhere through fields and in waste places we find the common primrose looking often dilapidated enough with its delicate petals hanging limp and worn. As we know, however, it is of nocturnal habit and reserves its beauty for the time when the twilight is dimming other things. Then slowly a slit or opening first parts the calyx, and very gradually the sepals



PLATE CXV. FLOATING JUSSIÆA. *Jussiaea repens grandiflora*.
(360)

bend downward to their reflexed position. Later the petals unfold and emit a fragrance subtle yet far reaching enough to catch the sense of night moths roaming about, even although they have not seen its shimmering light. At the base of the primrose's stalk it is interesting to see how symmetrical is the rosette arrangement of its leaves. One year the plant takes to make this rosette; in the second year it sends up its stalk of bloom and later having accomplished its work, perishes. This is the way of biennials. Once I saw a little plant that appeared to be a primrose. It had sent out several side shoots with puny flowers and had altogether so queer a look that I questioned a scientist in the neighbourhood concerning it. He pondered, then said, "In youth its top had probably been eaten by a cow."

Hartmannia speciosa may be mentioned as a most beautiful primrose of the western prairies and has now become abundantly naturalised in Florida, Georgia and South Carolina. Its flower, often over three inches in diameter, is white and richly tinted with rose-pink.

LONG-STEMMED SUNDROPS.

Kneliffia longipedicellata.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Evening-primrose.	Yellow.	Scentless.	Florida to New York.	May-July.

Flowers: large, showy; axillary and solitary or in a terminal raceme, their pedicels long and pubescent. *Calyx*: with slender tube dilated at the throat and linear, long segments. *Corolla*: with four thin, obovate petals. *Stamens*: eight, with linear anthers. *Stigma*: four-lobed. *Stem-leaves*: alternate, linear-lanceolate, narrowed at the base, entire, pubescent; basal ones obovate-spatulate and tufted. *Stems*: ascending, or erect, simple, or branched above, reddish and pubescent.

Very often the sundrops are mistaken for evening-primroses, but were they the same they would never be opening their petals in full daylight and boldly facing the sun. As the genus occurs usually through dry or sandy soil, its flowers make many bright yellow spots among gerardias, goat's-rue and other pea-like plants which overrun the ground. This particular species bears its common specific name in reference to the long pedicels which hold the flowers and afterwards outmeasure in length the capsule.

K. fruticosa, common sundrops, begins to bloom through the fields early in June. Its flowers, often two inches broad, grow in lateral and terminal, leafy spikes which as long as they last are quite close. While pubescent the plant is not covered with a bloom, and its small capsules are distinctively four-winged.

K. glauca, glaucous sundrops, only expands its delicate pale yellow flowers in the sunshine. They then are extremely showy and grow in short, leafy racemes. The plant is a smooth slightly glaucous one, with simple or

branching stems and lanceolate leaves contracted to a nearly sessile base. It is mostly through the mountainous parts of Georgia, Tennessee and North Carolina that it is found.



THE GINSENG FAMILY.

Araliaceæ.

Trees, shrubs or herbs bearing their perfect or imperfect flowers in umbels, racemes or panicles, and with mostly alternate, or whorled, compound or decompound leaves.

HERCULES CLUB. ANGELICA TREE. SPIKENARD TREE.

Ardlia spinosa.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Ginseng.	White.	Scentless.	Florida to Mississippi and northward.	June-August.

Flowers: very small, growing in umbels which form large compound panicles. *Calyx:* with five minute teeth. *Corolla:* with five rounded spreading petals. *Stamens:* five. *Styles:* five, spreading. *Berries:* ovoid, black. *Leaves:* very large with long petioles; bipinnately compound; the leaflets numerous; ovate, pointed at the apex, rounded and sessile or short stalked at the base; serrate; dark green above, paler, glaucous and pubescent underneath. A shrub or tree with very stout prickly stems or branches.

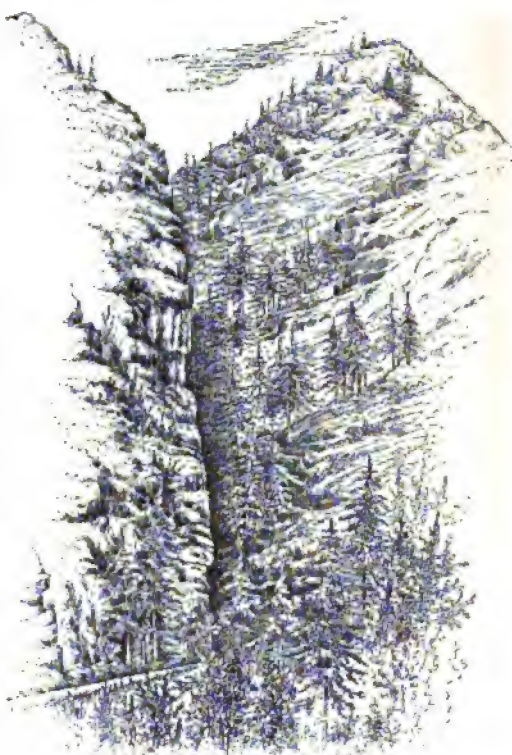
Along the foot-hills of the Big Smokies in Tennessee and on the western slopes of the Alleghanies the Hercules club is seen at its best. In this latter region, in a gorge noted for its beauty, and leaning against a bank clad with abundant verdure we first saw its great stems and enormous panicles of black, juicy and shining fruit. For as well as being a shrub it grows as a tree, thirty and thirty-five feet high, producing leaves fairly three and four feet long which late in the autumn turn to tints of purple or light yellow. So wonderfully beautiful did a spray of these leaves and berries appear that Mrs. Rowan determined to carry a branch away for decorative purposes. After a steep climb she secured it, just as the train which was to take us on to Roan Mountain Station turned a curve in the gorge.

While I waved my umbrella, she waved the *Aralia* branch, and so the engine was signalled. By a strange individual on the train who professed to be a "sympathetic, hypnotic, magnetic healer," we were then told that the berries as well as the plant's roots were made into a stimulant to cure rheumatism.

A. racemosa, American spike-nard, bears also its numerous umbels of small greenish white flowers in a dense, hairy panicle and appears a splendid plant, especially as its masses of berry-like fruit are beginning to ripen. Its large leaves are ternately compound; the cordate leaflets being irregularly serrate, thin and rather rough on both sides. Its herbaceous stem is strong and with thick spreading branches, which, however, are unarmed, and its roots are aromatic and fragrant.

A. nudicaulis, wild sarsaparilla, is readily distinguished from either of the two preceding species, as its bloom grows in three or five long peduncled umbels at the end of a naked scape. Moreover, from the base arises a solitary leaf. It is pinnately three to five-foliate, the leaflets being oblong ovate and serrate, and by the time the plant's fruit matures it has become so large as greatly to tower above it. Very generally the people gather its horizontal, aromatic rootstock, either to sell to chemists or use themselves as a flavouring for summer drinks. It takes somewhat the place of true sarsaparilla.

A. hispida, bristly sarsaparilla, or wild elder, frequently occurs through the mountainous parts of North Carolina and from there northward. Its herbaceous, leafy stem grows from one to two feet high and is very bristly. The leaves are bipinnately divided and the flowers are clustered in umbels at the end of long, naked peduncles. At no time very showy, the plant appears best when in fruit.



FIVE-LEAVED GINSENG. (*Plate CXVI.*)*Panax quinquefolium.*

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Ginseng.	Greenish.	Scentless.	Georgia and Alabama northward.	July, August.

Flowers : imperfect; minute; growing in an umbel at the end of a long, axillary peduncle. *Calyx* : short, with five small teeth. *Corolla* : of five petals. *Stamens* : five. *Pistil* : one; styles, usually two. *Fruit* : a cluster of bright red fleshy berries. *Leaves* : three; whorled at the summit of the stem and with petioles considerably longer than the flowering peduncle; palmately compound, the three to seven leaflets ovate, or oblong-obovate, long pointed at the apex and tapering at the base; serrate; thin; bright green; smooth; the lower pair much smaller than the others. *Stem* : erect, smooth; about one foot high. *Rootstock* : spindle-shaped; aromatic.

While the five-leaved ginseng bears very fleecy, attractive flowers, its true value lies, as we know, in its curious rootstock, long famed as being a cure for almost every sort of ill, and an antidote for every poison. Even the word panacea is believed by many to have been derived from its generic name. In China where it has been largely cultivated and also exported from that country in immense quantities, it is still regarded as being possessed of properties more powerfully stimulating to the human system than those of any other drug. In North Carolina a state law now prohibits it from being gathered before it has seeded itself, as formerly hundreds of pounds were yearly collected by those more impatient for their own profit than thoughtful of the plant's good. It is nevertheless becoming very scarce.

P. trifolium, the dwarf ginseng, or ground nut, is an attractive little plant, seen in bloom through the woods of early spring. Its slender peduncle bearing the umbel of cream-coloured fluffy bloom arises high above the three leaves whorled at the summit of the stem. These latter are long-petioled and palmately divided into three to five oval to oblanceolate and sessile leaflets. Often for the sake of its rounded, tuberous rootstock which is sweet-tasting and edible the little plant is uprooted.



THE CARROT FAMILY.

Umbelliferae.

Herbs often with hollow and furrowed stems ; their flowers growing in umbels, or rarely heads, which are usually subtended by an involucre ; and their alternate, simple or mostly compound leaves with petioles dilated and clasping at their bases.



PLATE CXVI. FIVE-LEAVED GINSENG. *Panax quinquefolium*.
(365)

CURTIS' ANGELICA.

Angelica Curtissii.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Carrot.	White.	Scentless.	North Carolina and Pennsylvania.	August, September.

Flowers: minute; growing in terminal glabrous or slightly pubescent umbels. *Involucre*: of several bracts, or none. *Fruit*: oval; flat; broadly winged all around and having oil tubes within the intervals. *Leaves*: twice ternate, or thrice divided with pinnate divisions, long stalked, the lower ones sheathed at their bases, the upper ones inflated and scale-like. *Leaflets*: ovate, pointed at the apex and cordate or slightly tapering at the base; irregularly dentate, or incised; thin. *Stem*: two to three feet high; erect; branching; grooved.

The Umbelliferae, an order to which this and similarly constructed plants belong, embraces a large group of various individuals strongly held together, however, by common bonds, and which amid our wild flowers holds as distinctive a place as does the Compositae. Many of the species produce on the mind similar impressions, for they are wonderfully alike; it being in some cases only by the mature fruit that they or even the genera are determined with satisfaction. Again the leaves of many individuals among them show strong variations, and their flowers being almost identical thus greatly perplex the beginner who would study their ways. A peculiarity of them all is that some time before their stamens are ready to shed the pollen, the stigmas are fully developed, so insects are necessary to cross-fertilize them. The species herein presented are all rather distinctive and present a fairly good showing of the family, but for a more extended study a purely scientific book should be used.

The genus *Angelica* bears its name on account of its credited efficacy in healing.

A. villosa, pubescent *Angelica*, a plant very similar to its relative, is characterised by the pubescence on its upper stems and peduncles and the dense tomentum of its umbels. Its leaf segments, moreover, are obtuse at the apex and the carpels less strongly winged.

HAIRY-JOINTED MEADOW-PARSNIP.

Thaspium barbinode.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Carrot.	Pale yellow.	Scentless.	Florida to Arkansas and Ontario.	May, June.

Flowers: minute; growing on long peduncles in terminal and lateral umbels. *Calyx-teeth*: very short. *Involucre*: none. *Carpels*: oblong, smooth, the broad ribs rather unequal. *Leaves*: once, twice or thrice pinnate; the leaflets, ovate, pointed at the apex and wedge-shaped or rounded at the base; sessile or nearly so with the exception of the terminal one, irregularly toothed, often lobed; thin. *Stem*: erect; branched above; two to four feet high; smooth excepting at the joints.

Many members of the carrot family are extremely pretty as is this one with its fine yellow flowers and fern-like sprays of foliage. In the distinction of it is to be noticed that the little tufts of hairs at the joints play an important part. It grows along river banks, or in open woods where often later in the season its place is taken by some showy coreopsis. The generic name is from the island of Thapsus where we remember the great mullein is a native.

BUTTON SNAKEROOT. RATTLESNAKE MASTER.

(Plate CXVII.)

Eryngium aquiducum.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Carrot.	White.	Scentless.	Florida to Texas, Missouri and New Jersey.	June-September.

Flower heads: globose-ovoid; growing on thick peduncles and subtended by ovate-lanceolate, bristle-tipped bracts; similar bracts also mingled with the flowers and forming the involucre. *Leaves*: linear, tapering to a point at the apex and having a sheathing, clasping base; sparingly bristled along the margins; parallel-veined; coriaceous. *Stem*: stout; one to six feet high; branched above; glabrous.

Hardly could a plant be found among the carrot family which in general appearance suggests less its kinship to the wild carrot, the parsleys and other well-known members of the order than this very button snakeroot. Its dense, bracted flower-heads form pleasing effects more similar to those of some fine grasses, while the foliage is so like the yucca's that at one time the plant was called *Eryngium yuccaefolium*. It grows mostly in pine-barrens and is subject to considerable variation both in height and in the size of its leaves.

E. Virginianum, Virginia eryngo, an attractive, slender individual, growing in wet places along the borders of streams and by ponds, bears narrowly, linear leaves, not parallel-veined, and small, dense heads of white flowers, subtended by an involucre of lanceolate, spiny-toothed, or entire bracts which are reflexed and sometimes as long as the heads themselves. They have also a glistening, silvery sheen.

E. Baldwinii, a species purely of the far south, is here mentioned simply to show the extreme forms of the order. Its flower-heads are very small, and it is a slender, almost prostrate little thing, often rooting at the joints. Its upper thread-like leaves are thin and quite unarmed while those nearer the base are three-parted. The earliest or basal leaves have long petioles.

The other interesting members of this genus which occur through our range have necessarily been omitted.

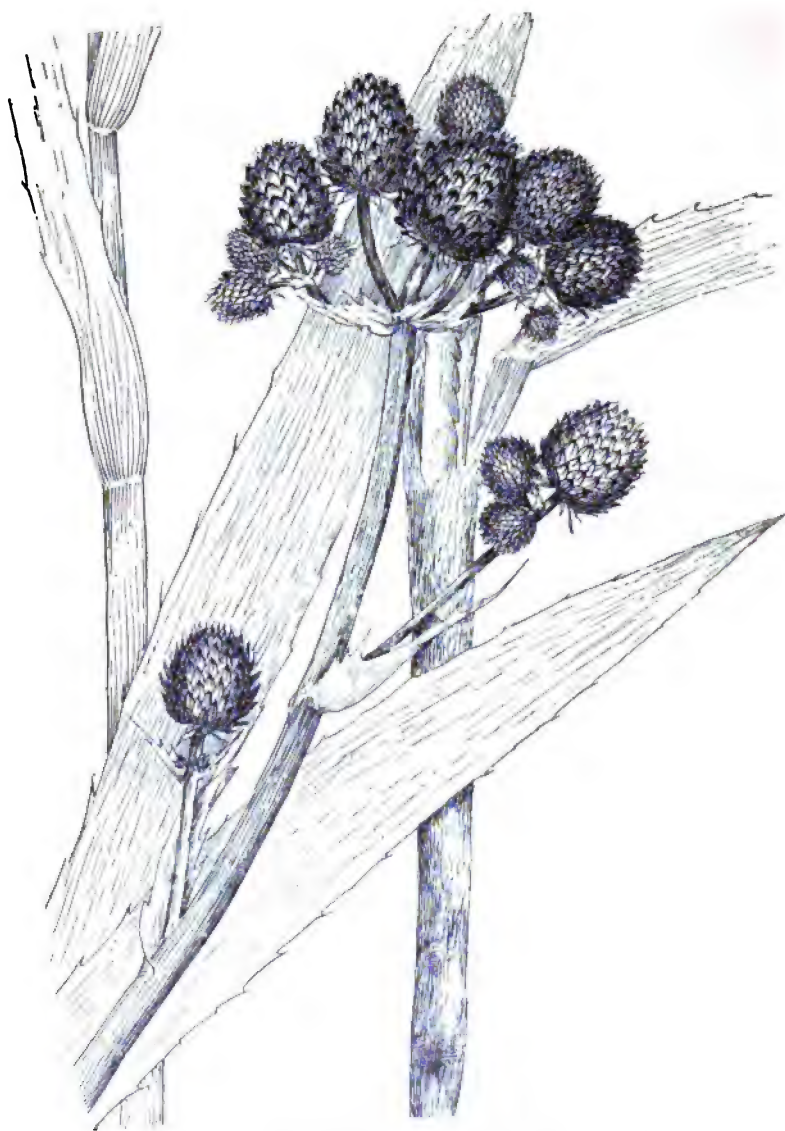


PLATE CXVII. BUTTON SNAKEROOT. *Eryngium aquaticum*.
(368)

SHORT-STYLED SNAKEROOT.

Sanicula Canadensis.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Carrot.	Greenish yellow.	Scentless.	Florida and Texas northward.	April-August.

Flowers heads : small; growing in irregular, few-rayed umbels; the sterile flowers few and with short pedicels. *Involucre* : of small leaf-like bracts. *Bractlets* : mingled with the flowers, also very small. *Leaves* : those from the base with very long, smooth petioles; those of the stem, short-petioled, or sessile; palmately three to seven parted, the divisions serrate, or sharply cut and smooth. *Stem* : one to three feet high; simple; smooth.

From *Sanicula Marylandica*, the common black snakeroot, this present plant of ours varies very little in superficial characters, but the former is a perennial species and the latter of biennial duration. There is also a character in the lengths of the styles between the two, the common black snakeroot having styles longer than the bristles of the fruit, a feature exactly reversed in the short-styled snakeroot.

For a long time the genus has been renowned for its powers of healing, especially in the matter of snake bites. Fifteen species are recognised as occurring in the United States.

SMOOTHER SWEET CICELY.

Washingtonia longistylis.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Carrot.	White.	Roots, anise scented.	Tennessee and Alabama northward to Canada.	May, June.

Flowers : minute; growing in small umbels and subtended by an involucre of few lanceolate bracts. *Calyx* : five toothed. *Corolla* : with five small petals. *Stamens* : five, slightly protruding. *Pistil* : one; styles, two. *Fruit* : long, narrow, bristly. *Leaves* : from the base and on the stem; twice or thrice compound with ovate, toothed or deeply cleft leaflets; thin and slightly downy. *Stems* : stout; one to three feet, smooth at maturity. *Rootstock* : aromatic, sweet.

As a virtuous member in a family of marked good and evil traits we find the smoother sweet cicely producing a rootstock of edible and tasteful quality, which to those who rely for food on nature's wild garden is as friendly as the parsnip, celery, parsley, carrots, caraway and other members, which thrive in cultivated places. The whole plant emits, moreover, a delightful fragrance as it spreads its fern-like, graceful spray of foliage through wooded places and raises its very small umbels of bloom. More noticeable also is the anise-like scent of its roots than that of its near relative.

W. Claytoni, woolly sweet cicely, is in opposition to the preceding plant a villous-pubescent species. It prefers to grow also in rich woods but hardly further southward than North Carolina. The genus has been dedicated to George Washington.

GOLDEN MEADOW PARSNIP.

Zizia aurea.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Carrot.	Yellow.	Scentless.	Florida and Texas to Canada.	April-June.

Flowers : growing in umbels with numerous rays and having no involucre, the bractlets of the involucre very small. The central flower and fruit of the rays being sessile. *Fruit* : oblong. *Leaves* : those from the base with very long petioles, twice or thrice ternately compound; the leaflets ovate, sharply serrate; those of the upper stem ternate and almost sessile. *Stem* : one to three feet high, branched, erect; smooth.

This genus of the carrot family was at one time confused with the Thaspiums, perhaps because there is so strong a similarity between their foliage. It is, however, now well established on its own merits and can always be distinguished by its wingless fruit.

Z. cordata, heart-leaved Alexanders, as its specific name would imply, shows as its most characteristic feature the shape of its radical leaves, they being long petioled, rounded cordate, crenate and quite dissimilar from those of the upper stem which are from three to five times divided. Usually the plant is tall and branching and has the lower part of its stem quite stout.

WATER HEMLOCK. SPOTTED COWBANE.

MUSQUASH ROOT.

Cicuta maculata.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Carrot.	White.	Scentless.	Florida and Mississippi northward.	July, August.

Flowers : minute; growing in large, loose, many rayed umbels. *Involucre* : usually wanting. Bractlets of the involucre, narrow. *Calyx* : five-toothed. *Fruit* : oval or ovate, with six oil tubes in each carpel. *Leaves* : compound; twice or thrice-pinnately divided, the segments lanceolate, or oblong-lanceolate, long pointed at the apex; deeply serrate, with veinlets extending to the borders; glabrous. *Stem* : stout; two to six feet high; hollow; glabrous and finely streaked with purple.

As long ago as when the Jews stoned their criminals to death, it is thought that they knew of the bitter and poisonous properties of certain umbelliferous plants and that they lessened the violence of such deaths by mingling their juices with the myrrh which the victims were given to drink. Even the potion which Socrates drank is believed to have been made from such, possibly from *Conium maculatum*, the poison hemlock so often seen growing in waste grounds.

MANY-FLOWERED MARSH PENNYWORT.

Hydrocotyle umbellata.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Carrot.	White.	Scentless.	Florida to Massachusetts and westward.	May, June.

Flowers : minute; growing in small umbels either simple, or proliferous borne on elongated peduncles which arise from a point opposite the leaves. *Involucre* : with ovate bracts. *Calyx-teeth* : minute. *Corolla* : with five small petals. *Fruit* : orbicular; without real oil tubes. *Leaves* : orbicular-peltate; bluntly crenate. *Stems* : slender; creeping.

Commonly we meet with these low marsh herbs which grow near or in water, usually rooting themselves from the joints. They belong to a not very handsome or interesting group but in many places seem to play a part in pond life. On the sides their carpels are flattened, and instead of displaying prominent oil tubes there is an oil bearing layer of tissue.

H. ranunculoides, floating marsh-pennywort which is indigenous from Florida to Pennsylvania and westward in muddy places, or in water where it can float, has thick leaves, cleft from three to seven times and crenate about their margins. Its long-peduncled umbels bear from five to ten flowers.

H. Canbyi, Canby's marsh-pennywort, is of creeping habit and bears proliferous umbels in verticils of from three to nine flowers, the pedicels of which are very short. Its leaves are peltate-orbicular and rather attractive.

H. verticillata, whorled marsh-pennywort, thrives well in ditches along the coast and is known by the verticillate way in which its umbels form on the scape an interrupted spike. Its leaves also arise from the base and are borne on long petioles. Unlike the fruits of the preceding species those of this pennywort are not notched at their ends.

A number of conspicuous plants that loudly proclaim themselves to be members of the carrot family and which occur very commonly in this country have, however, been introduced from the old world.

Among them are the wode-whistle, or poison hemlock, *Conium maculatum*, sometimes abounding in waste places; the fennel, *Foeniculum Foeniculum*, with its numerous umbels of bright yellow flowers, and thought by many to be a plant of ill omen, as the proverb runs, "sowing fennel is sowing sorrow." Again the fools' parsley, or cicely, *Æthusa Cynapium*, an intensely poisonous plant shows through waste places its numerous umbels of small white flowers; and the wild parsnip or tank, *Pastinaca sativa*, recognised as a common weed. Besides this goodly company so placidly thriving in the land of their adoption there is, more general than them all, the wild carrot, or

Queen Anne's lace, *Daucus carota*. It is as we know a beautiful plant, unusually decorative, and has been the stock from which the cultivated carrot has been produced; but also through its rank growth it becomes an objectionable weed, making often the farmer's life a burden to him.



THE DOGWOOD FAMILY.

Cornàceæ.

Trees or shrubs with simple opposite, alternate or whorled leaves, entire or more seldom toothed, and which bear regular perfect or imperfect flowers in cymes or other forms of inflorescences. Fruit: a drupe.

ALTERNATE-LEAVED DOGWOOD OR CORNEL.

Córnus alternifolia.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Dogwood.	Cream-white.	Scentless.	Alabama and Georgia northward.	May, June. Fruit: September.

Flowers: small; growing in flat, open cymes and having no showy involucre. *Calyx:* with four minutely toothed sepals. *Corolla:* with four lanceolate petals. *Stamens:* four. *Pistil:* one. *Fruit:* dark blue drupes growing on reddish pedicels. *Leaves:* alternate; clustered at the ends of the branches; slender petioled; elliptical; entire or minutely denticulate; yellowish green and glabrous above; paler and slightly pubescent underneath between the curved ribs. A widely spreading shrub or small tree with reddish brown bark, smooth or broken into narrow, irregular ridges.

When the time is at hand for the earth to show forth its life and every bough is bathed in warm sunny air, and buds burst and leaves unfold, there is much presented through our woods by the dogwood trees and shrubs. It is, however, only the so-called flowering one which, with its fine, broad involucre, throws out a splendid shower of white at this season. The others are without this showy signal, but still their small flowers clustered often in large heads have their own attraction. Many of the genus charm us, moreover, with exquisitely bright stems the bark of which retains sufficient colour to make them cheerful looking objects throughout the winter when their colouring matter and that of most of their neighbours has become inert. For this feature of beauty alone they are often planted. In the autumn also when beset with red, blue or white berries they are very handsome. By many country people the bark of the dogwoods is made into a powerful tonic for invigorating the system. In fact through the mountainous parts of the south where whiskey is made on the spot it is used as a basis for the drug.

C. stricta, stiff cornel, or dogwood, inhabits swampy places from Florida to North Carolina and Virginia and is seen as a shrub, six to fifteen feet high, with brown or greyish purple branches. Its opposite ovate or ovate-lanceolate leaves are much paler below than above and slightly rough, their margins being often minutely denticulate. In flat cymes the small flowers grow abundantly and later produce also small and pale blue drupes.

C. Amònum, kinnikinnik, or silky cornel, remains always a shrub, at most about ten feet high, and is found through low, moist woods and bordering streams. On the undersides of its ovate or oval leaves there is a silky pubescence, and such also noticeably covers the compact cymes, while as the leaves grow old their surfaces are often blotched with purple, a colour prominent on the branches. The drupes are pale blue and enclose a stone pointed at its base.

C. asperifolia, rough-leaved cornel, or dogwood, a pretty one of the genus, can be told by its white fruit. Its leaves also which are extremely rough above, are covered underneath with a silvery down. As a shrub it occurs through low grounds from Georgia northward to Canada.

C. florida, flowering dogwood, is too familiar, as through the woods it casts out its early spring bloom, to need a full description. From the species that have already been mentioned it mostly differs in having its flowers subtended by a four-leaved white involucre, the obcordate divisions of which are notched and tipped with pink at their apices. The true and insignificant little flowers of the centre are greenish. Again its drupes are ovoid and bright red. Late in the season when the leaves have nearly all fallen they rest in great abundance on the ground giving to the dried soil a warm cheery look.

SOUR, OR BLACK GUM. TUPELO TREE. PEPPERRIDGE.

Nyssa sylvatica.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Dogwood.	Greenish.	Scentless.	Texas and Florida to Maine.	April-June.

Staminate flowers: small; numerous; clustered at the ends of axillary, pubescent peduncles. *Pistillate flowers*: larger and from two to fourteen. *Drupe*: dark blue or nearly black, about half an inch long and enclosing an ovoid, flattened and slightly ridged stone, acrid to the taste until touched by frost. *Leaves*: alternate; entire, with petioles which when young are very downy; elliptical; dark green above, lighter below, the midrib pubescent when young. *Bark*: grey, rough, much broken in small pieces.

"T'ain't no good no how," a young lad in the Alleghanies assured me one day about the wood of the black gum, as there this tree is called. "If yer let it git civered with wet, it rots; and if yer keep it right smart dry

it's food for worms. Like enough tain't no good for fire-wood." But notwithstanding his depreciatory opinion of this individual which shows the first glimpses of brilliant scarlet in the autumn, it has a very decided use among the people of this region. It is one of their "chaw sticks" or "tooth brushes." And by these noneuphonious names is meant the little stick with which they dip snuff. This practice is indeed very different from the one wherein a pinch of the stuff is taken between the thumb and finger from an enamelled box and inhaled through the nostrils. Those that really dip snuff carry about a small stick nearly four inches long, and usually a bit of the black gum because it is a wood that chews up well into a little brush at the end. This they dip into snuff, or, when they cannot get it, into pulverised tobacco and then rub it up and down along the gums. Often an old woman is seen with such a bit of wood sticking out from between her closed lips. And it is not only the old women of the mountains that dip snuff. The fairest of the young girls are sometimes well confirmed in the habit. The region is one where even infants chew tobacco. In some places on occasions of festivity the girls provide the snuff and the men the whiskey. Who then shall doubt that opportunity is ripe for enjoyment?

N. ogeche, sour tupelo or ogechee lime, grows mostly in river swamps which during the greater part of the year are inundated. Its twigs have a silvery grey bark, and even in old age the leaves underneath are densely pubescent. After the foliage has fallen, bright red fruits gleam vividly from the trees; they are larger than any others of the genus, measuring often over an inch long and ripen in August. Their rather tart flavour causes them in Georgia and South Carolina to be abundantly eaten by the people as well as made into preserves.

N. aquatica, large tupelo, cotton gum, occurs as a large tree from Florida northward to Virginia and Missouri. Its parts, when young, are noticeably covered with a soft tomentum which, however, falls away as the plant matures. In October, its dark blue drupes and wonderfully gay foliage cast a charm over many a southern scene. It was Linnæus who named the genus after a water nymph; for this species he knew, and it confines itself to the swamps.



THE WHITE-ALDER FAMILY.

Clethraceæ.

Trees, or shrubs with simple, alternate, serrate leaves, and which bear small white flowers in long, narrow racemes.

MOUNTAIN SWEET PEPPERBUSH.

Clethra acuminata.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
White-alder.	White.	Fragrant.	Georgia to Virginia.	July, August. Fruit: October.

Flowers: growing in long, abundant and terminal racemes, either singly, or two, or three together. *Calyx*: five-cleft, with densely pubescent lobes; persistent. *Corolla*: with five broadly-linear, or oblong petals, squared at the apex. *Stamens*: ten; exserted, on the corolla. *Filaments*: slender, hairy; anthers sagittate, attached near the middle. *Pistil*: one; stigmas, three. *Capsules*: three-lobed; pubescent and containing many seeds. *Leaves*: with long, pubescent petioles; long oval, or oblong, pointed at the apex and rounded or pointed at the base, slightly one-sided; closely serrate; thin; bright green and glabrous above, lighter below, often pubescent. *Twigs*: brownish, pubescent.

With their intensely green and lustrous foliage and slender sprays of creamy flowers making the air heavy with a rich scent, there are through our woods hardly lovelier shrubs to be seen than these very pepperbushes. This one often is sometimes arborescent and grows abundantly in places about the outskirts of rhododendron thickets. Rather late in the season it comes into bloom, and then often intermingled with the flowers are the persistent capsules of the preceding year. In North America there are but two species of *Clethra* known, and so very beautiful are they both that it would seem as though they should be more general in cultivation.

C. alnifolia, white alder, or sweet pepperbush, covers quite an extended range and grows mostly near the coast. Its obovate leaves are generally smooth on both sides, and in its smooth filaments is found a specific distinction. When in the late season it comes into bloom it is very similar and quite as handsome as its exclusively southern relative.



THE INDIAN-PIPE FAMILY.

Monotropaceæ.

Saprophytic herbs with simple, bracted scapes and regular, perfect flowers which grow either singly, or in clusters.

INDIAN-PIPE. GHOST FLOWER. CORPSE PLANT.

Monotropa uniflora.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Indian-pipe.	White.	Scentless.	Florida northward.	June-September.

Flowers: terminal; solitary; nodding, becoming erect in fruit. *Calyx*: of two to four deciduous sepals. *Corolla*: of four to six bract-like petals. *Stamens*:

usually ten, the anthers peltate. *Stigma*: five-rayed. *Style*: short. *Fruit*: an erect capsule. *Stem*: four to ten inches high; leafless but bracted; round; smooth; white, turning to black after being picked.

This is the strange little plant that we sometimes catch a stray glimpse of through woods as perchance it thrives on some decayed vegetable matter in the neighbourhood of the Carolina lily. Its small nodding flowers are shaped like a pipe, and its look is ghost-like, the plant being quite without the grains of chlorophyll which produce the green colouring matter we are so accustomed to seeing in foliage. Occasionally, however, the whole plant is found of a pinky red. Through deep, well-shaded woods it blooms until late in the summer, and is perhaps as well known and beloved by country children as is Jack-in-the-pulpit. The Indians make a decoction from it for the purpose of strengthening the eyes.

Monotrópis odorata, Carolina beech-drops, or sweet pine-sap (*Plate CXVIII*), is more rarely found through shady woods than the Indian pipe and is a rather shorter plant. Its fragrant flowers also are considerably smaller and nod in a terminal raceme. They are pink and, as is the way of this family, the plants are Saprophytic.

Hypópitys Hypópitys, false beech-drops, or pine-sap, bears its flowers numerous and in a terminal raceme. From a dull écru they vary in colour to a tawny shade of red and are faintly fragrant. They, as well as the stalks, are noticeably pubescent. Of the upper flowers their parts usually are in fives, while the lower ones are divided in fours.



THE HEATH FAMILY.

Ericaceæ.

Small trees, shrubs or herbs with simple, alternate or opposite exstipulate leaves, and which bear perfect, mostly gamopetalous flowers.

FLAME AZALEA. YELLOW HONEYSUCKLE.

(*Plate CXIX*.) *Frontispiece.*

Azalea lutea.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Heath.	Flame.	Faintly fragrant.	Georgia to New York.	May, June.

Flowers: large; very showy in terminal clusters and appearing with the leaves. *Calyx*: five-parted, minute, pubescent. *Corolla*: funnel-form, with five flaring and pointed lobes, the tube and under parts being glandular-pubescent. *Stamens*: five, much exserted, pubescent at the bases of their filaments. *Pistil*: one. *Capsule*: linear-oblong; woolly. *Leaves*: clustered at the ends of the branches;



PLATE CXVIII. CAROLINA BEECH-DROPS. *Monotropsis odorata*.
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obovate, oval or oblanceolate, pointed at the apex and rounded or tapering into short pubescent petioles at the base; entire; ciliate; almost glabrous above and pubescent underneath. A shrub four to fifteen inches high with greyish twigs.

Through the mountain fastnesses—for it is on the high places of its range that the flame azalea grows to perfection—and where it sometimes covers solid acres with its wonderful bloom, even the natives notice and are somewhat awed by its loveliness. No greater tribute to its beauty could it have than this, for these people are impassive, very shy and reticent. Usually when asked about the azalea's spring bloom they simply answer laconically, "Pretty enough."

Bartram in his "Travels" calls this one the "fiery azalea" and in speaking of its varied hues says: "This epithet *Fiery* I annex to this most celebrated species of azalea as being expressive of the appearance of its flowers, which are in general of the colour of the finest red lead, orange and bright gold, as well as yellow and cream colour. These various splendid colours are not only on separate plants, but frequently all the varieties and shades are seen in separate branches on the same plant, and the clusters of blossoms cover the shrubs in such incredible profusion on the hillsides, that suddenly opening to view from dark shades, we are alarmed with the apprehension of the woods being set on fire. This is certainly the most gay and brilliant flowering shrub yet known."

Even more beautiful than the rhododendrons are often the azaleas through our range, but it is not every season that they are seen in their fullness of bloom. Mostly on alternate years they attain to the very height of their beauty. Then it is that the mountaineers notice them and dread the coming on of storms that might do them harm.

A. arborescens, smooth, or tree azalea, grows in a tree-like way to sometimes the height of twenty feet. Its obovate, or oblanceolate leaves are lustrous, smooth on both sides and in the season its crown is covered with innumerable exquisite white and pink blossoms which fill the air with a delightful spicy fragrance. It is then one of the fairest, most lovely spirits of the woodlands. In North Carolina and along the foothills of the Alleghanies it grows often in much profusion. It is found as far northward as Pennsylvania.

A. viscosa, swamp honeysuckle, white azalea often a low and much branched shrub, or again becoming as tall as ten feet, unfolds as it grows through swamps its white and fragrant bloom after the leaves are well spread, usually in early June. Again it is called clammy azalea, the tube of its flowers being so very viscid.

A. nudiflora, pinkster-flower, wild honeysuckle or pink azalea, which mostly is branched near its summit, grows on the contrary through woods

and thickets and opens its bloom at the same time, or a little before its leaves. Its pink and white flowers have not as intense a fragrance as those of the swamp honeysuckle, and their tube is pubescent but very slightly glandular. There grows we remember on the azaleas a fleshy ball called the May, or swamp apple, the very thought of which brought such delightful reminiscences of boyhood to Mr. Hamilton Gibson.

**PURPLE LAUREL. CATAWBA RHODODENDRON.
MOUNTAIN ROSE BAY. (Plate CXX.)**

Rhododendron Catawbiense.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Heath.</i>	<i>Lilac-purple.</i>	<i>Scentless.</i>	<i>Alabama to North Carolina and Virginia.</i>	<i>May, June.</i>

Flowers : large ; growing profusely with long, pubescent pedicels in terminal clusters. *Calyx* : persistent, the five pointed lobes very small. *Corolla* : bell-shaped, with five rounded, irregular lobes. *Stamens* : ten, exserted. *Pistil* : one ; style, exserted, crimson. *Capsule* : oblong, projecting the style and covered with a rusty down. *Leaves* : evergreen ; petioled ; elliptical or oval, sometimes rounded at the base ; entire ; thick ; dark green and glossy above, pale or glaucous underneath, the petioles covered with tomentum at least when young. A shrub, three to twenty feet high.

Often in connection with the history of plants we come upon the name of Mr. Fraser, a Scotchman, whose good fortune it was to have been one of the earliest botanists to traverse the south in quest of suitable plants to embellish European gardens. Although Michaux's name is inseparably associated with the discovery of this beautiful species, it was by "Mr. John Fraser and his late father," according to the Botanical Magazine, that it was introduced into Europe in 1809.

It grows on the highest summits of the mountains through its range, following the ridges ; and it would seem that only those that have seen it there with perhaps *Abies Fraseri* can form a just conception of its immense thickets and the beauty it imparts to the scene. It was said to have been owing to the colour effect of these flowers that Roan Mountain received its name. There is, however, little of a roan look about them when fresh. They are then a pinky purple. As the great bunches begin to fade, however, it can be conceived that from a distance they might produce an atmosphere of roan. But so great is the diversity of opinion concerning colour that we find the greater number of natives through these parts calling the plant "blue laurel."

Of the beauty and interwoven, tangled growth of the rhododendrons through many mountainous parts of the south it is difficult to transmit an impression. On some of the high mountains of North Carolina they form veritable jungles. Not far from Highlands a place in western North



PLATE CXX. PURPLE LAUREL. *Rhododendron Catawbiense*.
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Carolina there is a stretch of fully a thousand acres over which the various species vie with each other in strength and luxury of bloom. As we drove along through this region they bordered the road in many places, arising often so high that only their bare branches were on a level with our eyes. The great mass of leaves was far above. Fairly they climb over the mountains and in the spring transform them into huge bouquets.

R. vaseyi is local in its habitat, growing mostly in the mountainous parts of North Carolina and always near swamps or in washed places. Its rose-pink flowers burst out in May from very large flower-buds which early in March are well swollen and show scales tipped with black. Later the leaves unfold. This species is the only one in our range which is not evergreen during the winter. Thousands and thousands of these plants grow through parts of western North Carolina. On Grandfather Mountain as well as at Lake Sapphire we heard constantly their praises sung by visitors.

R. punctatum, little or dwarf laurel, dotted-leaved rhododendron, is the smallest of our evergreen species. It has seldom about it that great luxury of bloom which we associate with the others, its growth being more scattered and the bunches of flowers thinner. Often it is a rusty-looking shrub, but still in bloom very beautiful, and besides the first to blossom. Usually it clings to the borders of mountain streams and early in May begins to show its rose-pink flowers. It would seem as though two forms of this shrub existed in the mountains of North Carolina where they are natives. The one has its corolla darkly spotted with yellow and green in the throat and is of a deep pink; the other shows almost a pale flesh tint and is without markings whatsoever. Of both sorts the calyx and corolla are much dotted with a viscid matter.

R. maximum, great laurel or rose-bay, an old friend among the genus and which appeals to me as the most beautiful, is covered in early June with large waxy white flowers marked with yellow or orange spots. In cool, moist places along the mountains it forms sometimes thickets so interwoven and close as to be almost impenetrable, many of the plants stretching upward as trees to nearly forty feet high and interlacing themselves with the boughs of others. Through the Alleghanies, where it attains a luxury as in no other region, we again and again were held in admiration of it as it mingled with the common hemlock and Fraser's magnolia, or followed the ridges at a lower altitude than *Rhododendron Catawbiense*.

R. Champñi, which inhabits sandy barrens along the coast of the far south, is although small a lively sight in April when abundantly lit by its rose coloured and spotted blossoms. Its very thick leaves, oval, or ovate, are dotted underneath and the stiff reddish brown branches are covered with a silvery grey coating.

FALSE HEATHER. ALLEGHANY MANZIESIA.

Menziesia pilosa.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Heath.	Reddish purple or greenish.	Scentless.	Georgia to Pennsylvania.	May, June.

Flowers : small ; drooping ; growing in umbels with long, hairy pedicels at the ends of the branchlets and appearing with the leaves. *Calyx* : persistent ; with four blunt teeth ; ciliate. *Corolla* : urn-shaped, the four teeth rounded at the summit. *Stamens* : eight ; included. *Pistil* : one ; included. *Capsule* : woody ; ovoid ; covered with fine glandular hairs. *Seeds* : numerous ; pointed. *Leaves* : with short petioles ; oblong to obovate, bluntly pointed at the apex and narrowed at the base ; entire ; thin ; hairy on the upper surface, pale and glaucous underneath with a white fuzz on the ribs. A shrub two to six feet high with greyish brown peeling bark, black dotted.

Through the mountainous woods of its range where there is so happy a blending of much northern and southern flora, and a strength of growth almost unrivalled prevails, the false heather climbs sometimes to the tops of such high peaks as Mount Mitchell and there unfolds its delicately formed bells of bloom. In colour they are rather indefinite.

SAND MYRTLE. MOUNTAIN HEATHER. (Plate CXXII.)

Dendrium buxifolium prostratum.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Heath.	Pinkish white.	Scentless.	Mountains of North Carolina.	May-October.

Flowers : tiny ; one or several growing in terminal corymbs. *Calyx* : five-parted, persistent. *Corolla* : with five delicate, spreading petals. *Stamens* : ten ; exserted. *Pistil* : one. *Capsule* : ovoid and projecting a remnant of the slender style, three to five-valved. *Leaves* : very small, with short petioles and growing thickly along the branchlets ; oval or oblong ; obtuse ; thick ; dark green and shiny above, lighter below ; glabrous ; evergreen. A low, much branched shrub with rough and broken bark.

A prettier, more thrifty form of growth can hardly be imagined than is displayed by this bewitching little shrub as it is seen on the tip top of Roan Mountain hugging about and closing in the thick rounded clumps of rhododendrons. It thus daintily fills in the space between where their branches stop and the ground. Late in September after its prolific blooming was over we saw the little thing still lit here and there with its exquisite, tiny white flowers. Often their petals were tipped with deep pink, or red, and the buds especially were of this bright colour. The scientific name of the plant when repeated to a mountaineer who said he'd "heard it called sum-thin' in books," so startled his childish mind that with a swift contemptuous glance he turned and fled like a deer.



PLATE CXXI. HEMLOCKS AND RHODODENDRONS.

Through a region of great distances little traversed, where vegetation becomes so thick as to hide many a pitfall, it seems not strange that the mountaineer is mostly silent and turns his glance quickly away after once having encountered that of the stranger. But through jungles of rhododendrons, with ears awake for the panther's cry; in and out among noble hemlocks; or wading for miles down swollen streams, he has no fear. Such to him are only the harmless, familiar spirits of the mountains.

(CXXI.)



PLATE CXXII. SAND MYRTLE. *Dendrium buxifolium prostratum*.
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D. buxifolium, the type of the genus, is an erect, spreading plant and grows mostly near the coast.

TAR-FLOWER. (Plate CXXIII.)

Bejardia racemosa.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Heath.	Pinkish white.	Scentless.	Florida and Georgia.	May-July.

Flowers: showy; growing in terminal, simple, or compound racemes; pedicels, long, slender. *Calyx*: short, with seven broad, sharp pointed teeth. *Corolla*: with seven, spatulate-oblong petals, three quarters to an inch long and nectar bearing at the base. *Stamens*: fourteen on the corolla; filaments, woolly at their bases. *Style*: long, exserted. *Capsule*: globose six to seven valved and projecting the style. *Leaves*: sessile; oval, or oblong, pointed at the apex and tapering to a point at the base; entire; olive-green and lustrous above, the yellowish midrib very prominent underneath, coriaceous. A branching shrub three to four feet high, the twigs covered with bristly hairs.

When the presence of the tar-flower is unexpected and it has burst forth with all its splendour of life, it is such a surprise to those that find it and such a beauty that it can hardly be watched with equanimity. About the flowers there is a peculiar, delicate expression something like the wild ones of early spring, or those that have been reared in cultivation. Not infrequently they linger in bloom a long time while many others in the pine barrens blossom and die.

Elliottia racemosa. (Plate CXXIV.)

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Heath.	White.	Scentless.	Formerly from Georgia and South Carolina.	June.

Flowers: growing in long, terminal, paniced racemes, with long, smooth pedicels. *Calyx*: minute, with four broad, pointed sepals. *Petals*: four, spreading; spatulate-linear, rounded at the summit and slightly attached at the base. *Stamens*: eight, included. *Pistil*: one, with capitate-stigma. *Leaves*: oval, elliptical or oblanceolate, pointed at the apex, the mid-vein projected and tapering at the base into the margined petiole; entire; bright green and smooth above; slightly pubescent underneath at least when young. A shrub four to ten feet high, nearly or quite glabrous.

For those who wish to clear up a mystery of long standing it would be well to study carefully the characteristics of *Elliottia* and then go forth and search for it until its hiding place, if still existing, is revealed. At present its habitat is lost to the knowledge of scientists as was that of *Shortia* for so many years. The accompanying illustration, which portrays it clearly, and the analysis here given were made possible from a specimen taken from plants of *Elliottia* collected about 1878 by Mr. P. J. Berckmans, near Augusta, Georgia, and still growing in cultivation at the Fruitland nurseries.



PLATE CXXIII. TAR-FLOWER. *Befaria racemosa*.

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PLATE CXXIV. *Elliottia racemosa*.
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WICKY. (Plate CXXV.)

Kalmia cuneata.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Heath.	White, magenta spotted.	Scentless.	North and South Carolina.	June.

Flowers: growing with long, thread-like pedicels in lateral corymbs. *Calyx*: persistent, of five ovate, pointed sepals. *Corolla*: saucer-shaped, with five broadly rounded lobes, cream-white with a ring of magenta at the base. *Stamens*: ten, the anther of each one held in a pouch-like depression of the petals. *Pistil*: one, projecting the style. *Capsule*: sub-globose, ridged, depressed at both ends. *Leaves*: oblanceolate, or oblong, pointed or blunt at the apex, sometimes tipped with the mid-vein and tapering at the base into the margined petiole, or sessile; entire; bright green above, lighter below; glabrous; deciduous. A small shrub with reddish bronze and slightly pubescent twigs.

Although as a feature of swamp life this most dainty of the laurels is quite common, it seems to be little known. It is peculiar in being the only one of the family that sheds its leaves during the winter. They are fine and graceful and have a less stiff look than many others. The flower's charm lies in the deep magenta ring which encircles the base of the delicate petals.

The genus of *Kalmia* is an interesting one and was so named by Linnaeus, in honour of his pupil, Peter Kalm, who travelled in America and later published an account of his search for flowers. As its members cover the hillsides with delicate bloom against a background of dark and lustrous leaves, or grow in clusters through swamps reflected by the water, their wondrous beauty must appeal more to the sentiment than can possibly their peculiarities to the scientist. It is true that in construction their flowers are most cleverly arranged to the end that they may be fertilized by insects. Their thread-like filaments are curved downward and the anthers held in the corolla's pouches as ingeniously as ever trap was set. When the insect alights and touches with his leg one of these little arches, up flies the anthers and discharges from its pores the pollen. Then as the bee goes off to sip nectar from another flower he deposits on the sticky surface of the erect stigma these little golden vitalizing grains. And his just work is done. After all, however, we remember as Ruskin has pointed out that "the reason for seeds is that flowers may be; not the reason of flowers that seeds may be."

K. hirsuta, hairy laurel (Plate CXXVI), prefers not the cool barren hillsides for its home, but spreads its deep rose-tinted bloom in the damp, sandy soil of pine barrens. It is a low shrub with ascending, hairy branches and usually but one or a few flowers grow from the axils, of oblong or lanceolate hirsute leaves.



PLATE CXXV. WICKY. *Kalmia cuneata*
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PLATE CXXVI. HAIRY LAUREL. *Kalmia hirsuta*.
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K. latifolia, mountain laurel, calico bush, spoonwort or ivy—the latter name being in most common use by the mountain people—our most general and well-known species of laurel, grows in the south through sandy or rocky soil. During the winter low bushes of it often irregular and scraggly in outline thrust themselves to the very edges of wooded roadsides, when their elliptical, bright green leaves are perhaps the only bits of colour in sight, unless perhaps a low rosette of the great mullein's leaves are near by.

K. angustifolia, lambkill, wicky or sheep-laurel, a charming one of the laurels, is known by its oblong, blunt leaves and deep crimson, almost purplish flowers which are rather small and borne usually in great numbers. It spreads itself over barren hillsides as well as inhabits swamps and moist places, being in early June a truly enchanting sight. The laurels have a rather bad reputation in one way, especially lambkill, as they are renowned for being poisonous to stock that eat of their young growth in early spring. Water distilled from the leaves contains deadly properties; even honey made from the flowers according to some writers should be most assiduously avoided. The Indians, it is said, knew of this poisonous element in them and held it in reserve for committing suicide or wreaking vengeance on their enemies.

CATESBY'S LEUCOTHOË. DOG HOBBLE. (Plate CXXVII.)

Leucothoë Catesbæi.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Heath.	Creamy white.	Fragrant.	Georgia to Virginia.	April-June.

Flowers: growing thickly in upright or slightly pendulous, axillary racemes and bracted at the bases of their pedicels. *Calyx*: five divided. *Corolla*: cylindric, with five points and contracted at the throat. *Stamens*: ten. *Pistil*: one. *Capsule*: depressed-globose, five-lobed and five-valved containing numerous, minute seeds. *Leaves*: ovate-lanceolate; petioled; tapering towards the apex; finely serrate and bristle-tipped nearly all around; bright green and lustrous; lighter below; evergreen. A shrub, three to six feet high with highly coloured, glabrous twigs.

"Many a poor dog has heard his bones crackle when caught in the meshes of this bush," said an old hunter, and thus he implied an oft recurring tragedy. For the shrub's interwoven, thick growth makes it at times impossible for a dog to pass through, while the bear, of which he is on the track, seeing this, turns about and carries the war into the enemies' camp. With his stronger force he can naturally grapple with the plant better than the dog. The mountain people also call it "poison hemlock" knowing that it is poisonous to both cattle and sheep, although in general the instinct of these creatures teaches them to leave it alone. But when they have been tied up for some time they become reckless of such warnings and nibble at



PLATE CXXVII. CATESBY'S LEUCOTHOE. *Leucothoe catesbaei*.
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it, or in fact almost anything else, whenever they get the chance. Mr. Boynton, of Biltmore, proved that this country lore concerning it was well grounded; for once a wilful pair of oxen that was being driven used every opportunity to snatch at it and were finally very sick.

It grows only through the mountains and along cool stream borders, and in the winter especially is most beautiful. The flower-buds which were developed in the autumn have by this time turned a deep red and well match the leaves of the upper stem. Those below remain green and thus form a most charming contrast in colour. At Christmas it is gathered for the decoration of houses; in fact the mountaineers pull it in great quantities and take it to the towns where for this purpose it is sold.

MOUNTAIN LEUCOTHOË. (Plate CXXVIII.)

Leucóthoë recurva.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Heath.	White.	Sweet, like honey.	Virginia to Alabama.	April-May.

Flowers : growing loosely in long, recurved and one-sided racemes and appearing mainly before the leaves. *Calyx* : small, five-parted and having two small, pointed bracts at its base. *Corolla* : campanulate, or cylindrical with five small points. *Capsule* : depressed at both ends and from which the style protrudes; five-valved. *Leaves* : oval or oblong; pointed at both ends or rounded at the base; finely serrate; bright green with lighter coloured and pubescent veins; thin; deciduous. A branching shrub, two to ten feet high with highly coloured twigs.

It was Buckley who discovered this leucothoë as it grew near Paint Rock in the mountains of North Carolina. Often it is found bordering small mountain streams, but usually occurs on higher ground and by its one-sided racemes, its deciduous leaves and manner of growth can at once be distinguished from *Leucothoë Catesbæi*. Again it can be separated from *Leucothoë racemosa*, a species of swampy places chiefly along the coastal plain, because its anther cells have but one awn instead of two.

In the autumn the foliage of the mountain leucothoë turns to most brilliant and beautiful colours varying from red to bronze, but it does not last over the winter. For this, the gayety of their late colouring, their rich toned stems and waxy, sweet little flowers the genus is one most desirable in cultivation.

L. acuminata, pipe-wood, titi, inhabits the swamp margins from eastern Florida to the Carolinas. Its lanceolate, entire leaves tapering to a long point at the apex are one of its distinctive traits. This species, on account of its long hollow stems, furnishes many people an industry, in collecting them for pipes.

L. axillaris, downy leucothoë, has woolly stems at least when young and



PLATE CXXVIII. MOUNTAIN LEUCOTHOË. *Leucothoë recurva*.
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is further known by the shortness of its very dense axillary racemes. As early as February and March it comes into bloom in the lower districts and is then the freshest, prettiest sight seen along the stream's bank or through sandy swamps. The downy leucothoë is otherwise much like Catesby's leucothoë.

MOUNTAIN FETTER-BUSH.

Pteris floribunda.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Heath.	White.	Scentless.	Georgia to Virginia.	April, May.

Flowers: drooping; growing densely in terminal hirsute racemes and having pointed bracts at the bases of the pedicels. *Calyx*: deeply five-parted. *Corolla*: urn-shaped, with five short teeth. *Stamens*: ten. *Capsule*: globose; five-valved, and containing many seeds. *Leaves*: ovate-lanceolate; finely serrate; ciliate when young, becoming glabrous; thick; bright green and glossy; evergreen. A branching shrub, two to ten feet high with copper-coloured, leafy and hairy twigs.

It is only through the mountainous parts of its restricted range that this most exquisite of the fetter-bushes is found, and there it usually secludes well itself near the summits of the highest peaks. It is never in its wild state very common. Early in the spring it is most lovely when fairly loaded with innumerable pure, white flowers. Its charm at all times more-over is heightened by being an evergreen.

In cultivation it is regarded as of inestimable value for it becomes quite hardy and indifferent to soil and exposure.

P. phyllireifolia, a low spreading fetter-bush, grows only in the wet pine barrens near the coast of western Florida. Its branches are smooth and grey and the leaves evergreen. In axillary racemes from four to twelve flowers are produced and often as early as January they begin to show their impatience to bloom.

P. ntlida, fetter-bush, throws out its small flowers in axillary umbels, wherein like little inverted urns, contracted at the throat, they sparkle either faintly red or pure white. And most sweetly are they scented. The branches appear sharply angled and although glabrous throughout are often covered, as the undersides of the entire leaves, with fine black dots. In swamps or wet woods it grows from Florida to North Carolina and early in April is abundantly laden with bloom.

P. Mariàna, stagger-bush, is very beautiful but differs from those of the genus that have been mentioned in shedding its leaves during the winter. Its flowers which are unusually large come forth abundantly in umbels at the sides of quite leafless spurs and produce something the same effect as many sprays of bloom represented by Japanese art. In fruit the little pedi-

cels all curve upward. As a low shrub it occurs rather generally from Florida northward to Rhode Island. It is one more of the lovely heath family known as a poisonous plant.

Zenobia cassinefolia.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Heath.	White.	Scentless.	Florida to North Carolina.	May.

Flowers: growing along the branches in umbel-like clusters. *Calyx-lobes:* ovate; short; persistent. *Corolla:* bell-shaped; five-toothed. *Capsule:* globose, depressed at the top and projecting the style; five-celled, with conspicuous ribs. *Leaves:* alternate; oblong, or elliptical; short petioled; pointed or obtuse at the apex; serrate; paler below than above, glabrous, deciduous. A branching shrub three to four feet high; smooth throughout.

One long chain of beauty with many diverse links seems to be spread before us by the heath family. From the quaint trailing arbutus to the great rose bay, *Rhododendron maximum*, there is a forcible contrast, while the fetter-bushes and leucothoës with their waxy urn-shaped flowers are indeed no more beautiful than the larger, bell-shaped ones of the *Zenobia* which come forth on almost leafless shoots. In swamps or low barrens it grows and was formerly called *Andromeda speciosa*, it being so very similar to members of that genus.

DWARF CASSANDRA. LEATHER-LEAF.

Chamaedaphne calyculata.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Heath.	White.	Scentless.	Georgia, northward.	April-June.

Flowers: small, solitary and growing closely in the axils of the upper leaves which form terminal leafy racemes. *Calyx:* persistent, with five sepals and having two close bracts at its base. *Corolla:* cylindrical; five-toothed. *Stamens:* ten. *Pistil:* one. *Capsule:* rounded; depressed, five-celled and projecting the style. *Leaves:* alternate, rather small, oblong, or obovate, bluntly pointed, or rounded at the apex and tapering at the base; entire or obscurely serrate; thick; scurzy underneath even in age; evergreen. A shrub two to four feet high, branching.

While stiff and rather small, the dwarf Cassandra is still one of the very pretty inhabitants of luxuriant swamps and moist, shady places. It could, in fact, be nothing else when in wand-like sprays hang little nodding flowers, each guarded by a leaf. In its most southern home they sometimes venture to blow as early as March, but in the far north to where its range extends they often delay until July.

The name bestowed upon this monotypic genus, from the Greek, signifies ground or low *Daphne*. Indeed, among the heaths there is quite a levee of goddesses and muses. We have the genus *Andromeda*, named by Linnaeus in commemoration of the fair maid rescued by Perseus. Another for

Cassiope, her mother ; Phyllodoce recalls one of the sea-nymphs, and Pieris one of the muses.

SOURWOOD. SORREL-TREE.

Oxydendrum arboreum.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Heath.	White.	Like honey.	Florida and Alabama to Pennsylvania.	June, July.

Flowers : growing one-sided in long terminal paniced racemes at the ends of leafy shoots. *Calyx* : persistent ; five-toothed. *Corolla* : urn-shaped, tapering towards the five-toothed summit ; pubescent. *Stamens* : ten ; included. *Pistil* : one. *Capsules* : pyramidal ; five-valved. *Leaves* : alternate, with slender mostly reddish petioles ; oblong, pointed at the apex, and pointed or rounded at the base ; finely serrate ; lustrous and at maturity glabrous ; sour like sorrel. *Bark* : grey, tinted with red ; deeply furrowed. A shrub or tree from ten to sixty feet high.

What the linden tree is to the honey bees of Wisconsin, so is the sourwood to those that seek their livelihood through the mountainous regions of the south. Or to this woodland rover it takes the place of clover blossoms as it spreads its plume-like, drooping sprays of exquisite little flowers through shady woods and by-ways where it would be much too dark for clover to grow.

Very early in the autumn, almost as soon as those of the black gum, the leaves of the sourwood turn to a peculiar pinky shade of red, wholly their own. Then also being abundantly laden with soft pale green capsules the trees are very beautiful and quite distinctive from all other verdure.

Sometimes when the country people have exhausted their supply of sumac leaves they seek those of the sourwood to dye their wool black, and to decorate their homes.

TRAILING ARBUTUS. GROUND LAUREL. MAYFLOWER.

Epigæa repens.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Heath.	White and pink.	Fragrant.	Florida northward to New England.	March-May.

Flowers : growing in short, terminal and bracted clusters. *Calyx* : of five imbricated sepals. *Corolla* : tubular ; salver-shaped ; five-lobed. *Stamens* : ten, with oblong anthers opening lengthwise. *Capsule* : globose, depressed, five-celled. *Leaves* : alternate with hairy petioles, oval, rounded or minutely pointed at the apex and cordate or rounded at the base ; entire ; thick ; evergreen. *Stems* : six to twelve inches long ; prostrate and covered with hispid, reddish hairs.

After we have been to the woods and brought home the brave little hepaticas of earliest spring, or blue eyes as lately I heard them called, we wait awhile and then start out to gather the trailing arbutus. For its time

of blossoming will then have come, and snugly lying on the ground its elfin pink and white face, hidden under the grim and rusty leaves which have lasted over the winter, will smile upon us. On sloping banks that border the woods where the sun warms the ground it sometimes can be found in blow as early as March, but more often we must wait until April before much of a bunch can be gathered.

Only in its own wooded home will it bloom. We may carry home and place in water sprays of it so far advanced that little glints of white can be seen in the bud's openings, but gradually they will droop and fade instead of blowing out more fully. In New England where it is regarded with much sentiment, having been the first flower to greet the Pilgrim Fathers, it is generally called Mayflower. But the flower celebrated through English literature and history under that name is a hawthorn.



THE HUCKLEBERRY FAMILY.

Vacciniaceæ.

Including in our species erect or prostrate shrubs (rarely small trees) with simple, alternate leaves and small perfect gamopetalous flowers which are either solitary or clustered. Fruit : a berry or drupe.

BUCKBERRY. BEAR HUCKLEBERRY. (Plate CXXIX.)

Gaylussacia ursina.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Huckleberry.	Yellow or pinkish white.	Scentless.	Mountains of North and South Carolina.	May, June. Fruit: July.

Flowers: growing sparingly in racemes on slender, reddish pedicels. *Calyx-tube:* rounded, persistent, with five teeth. *Corolla:* bell-shaped. *Stamens:* ten. *Pistil:* one. *Fruit:* a berry-like black drupe without bloom. *Leaves:* lanceolate-obovate or oblong; acute at both ends or sometimes rounded at the base; entire; very thin and covered along the veins with a silky tomentum often appearing rusty. A shrub two to three feet high, branching.

About the juicy, acrid taste of the buckberry's fruit there seems to be some diversity of opinion. Many regard it as more delicious than that of any other of the genus, having as it was expressed to me, "a real good smack." Again it is thought to be a trifle "puckery." This latter impression, however, usually wears off when once enough of the berries have been eaten. About Highlands in western North Carolina where the plant is very common I found it no hardship to stand in the broiling sun to pick and eat



PLATE CXXIX. BUCKBERRY. *Gaylussacia ursina*.
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them and moreover, just as fast as I could. The little shrubs were then particularly attractive as the unripe berries were a brilliant red and mingled pleasingly with those of dead black ripeness. And every one of the bushes was fairly loaded with them. Indeed in this neighbourhood thousands of quarts of the berries are made every year into jellies and jams. They require little sugar for doing up, and so wonderful are the crops that four brimful quarts sell for only about ten cents.

G. frondosa, dangle-berry, or blue tangle, inhabits mostly low ground from Florida and Louisiana northward to New England. When in bloom, or showing its small, reddish tinted corolla, its oval or obovate leaves are quite glaucous underneath, and always remain rather pale. The blue berries also are covered with a white bloom turning them in some lights to shades of grey which closely match the twigs.

G. dumosa, bush huckleberry, grows sometimes rather close to the ground, although usually its branches ascend and it has the appearance of a spreading and dwarfed bush. Of the particularly graceful little flowers the corolla is white, tinted with deep pink or red, and the bracts at the bases of the pedicels are leaf-like and persistent. The small berry is black and quite without a bloom. On moist mountain slopes or in swampy places it is often very common.

G. resinosa, high-bush huckleberry, thrives best on dry hillsides. It is considerably branched, and on nearly all its parts are minute, resinous globules. But a few rather small and reddish flowers grow in the one-sided racemes, while the bracts at their pedicels' bases are small and fall early. Its berries are smooth and black.

HAIRY HUCKLEBERRY. (Plate CXXX.)

Vaccinium hirsutum.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Huckleberry.	Pure white.	Scentless.	North Carolina and Tennessee.	May, June. Fruit: July, August.

Flowers: growing closely in short racemes. *Calyx-tube*: short, rounded, with five teeth, very hairy. *Corolla*: bell-shaped, slightly contracted at the apex, with five very short teeth. *Stamens*: ten. *Pistil*: one, hairy. *Fruit*: a dark blue berry covered with hairs. *Leaves*: growing thickly on the branches and averaging about one and one-fourth inches long; entire; ovate or oblong, usually acute at both ends; thin and covered with a soft, white tomentum. A low shrub, one to two feet high. *Stems*: somewhat angular, deep reddish or greenish brown and covered with stout hairs.

After Professor Sargent and Mr. Stiles had left the Keowee River, near where the former had rediscovered shortia, they continued on their way in search of a blueberry recorded to have been found in the mountains of



PLATE CXXX. HAIRY HUCKLEBERRY. *Vaccinium hirsutum*.
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Cherokee County, fifty years earlier by Mr. S. B. Buckley. To the inhabitants of this region they proclaimed that they were looking for "a hairy huckleberry;" as the distinctive characteristic of the plant is that hardly one of its growing parts can be examined which has not a fine coating of hairs. Finally they offered a reward of five dollars for such an one, and the plan worked like a charm. It set the country boys seeking huckleberries with wonderful energy. They even forgot their appetites. Not until the following summer, however, did Professor Sargent receive from Mr. W. F. Manney of Robbinsville a box of *Vaccinium* fruit covered with the desired short, white hairs. Later a supply of seedlings and grafts was sent to the Arboretum. Although still regarded as a rarity the shrub is now being reported from a number of points.

V. pallidum, pale or mountain blueberry, is famed for its large blue fruit, the most deliciously flavoured of any of the genus. Through the mountainous parts of the south from Virginia to South Carolina, it prefers to grow. On the trail up Grandfather Mountain I saw it occurring sparingly most of the way. But on the rocky summit where the strong sun of mid-day poured down it spread itself over the ground in great abundance, fairly disputing in spots the possession of that high place with the sand myrtle. It was then early in the autumn, and while much verdure was still seen its thin leaves had already turned to deep red. Many of them were sharply serrulate, others only minutely so, and again they looked to be entire and ciliate.

V. arboreum, farkleberry, always readily known through its habit of sometimes becoming a small tree, often twenty feet, and rarely thirty feet, tall, and because it grows best in dry mostly sandy soil of open woods. Its bell-shaped flowers, in leafy racemes, are produced most abundantly, and not until the shiny, oval leaves have dropped in the winter do the black berries ripen. They are not at all edible.

V. stamineum, deerberry or squaw huckleberry, which in dry woods becomes as high as five feet, shows the peculiarity of having its hairy stamens exerted beyond its bell-shaped, slightly spreading corolla. These flowers, moreover, are abundantly borne in leafy racemes, and hang from thread-like pedicels. The berry is mostly green, or yellow, and even when fully ripe is hardly fit to eat.

V. crassifolium shows an extreme of the genus in being of procumbent habit, and in bearing many small oval leaves, thick and shiny. The white, or rose coloured, corolla also is small and of a rounded bell shape. Usually the plant inhabits sandy soil near the coast, or else is found in the pine-barrens.

V. nitidum, a close-growing, compact little thing, seldom over two feet, bears an abundance of very small and evergreen foliage. Its home

is in the low pine-barrens of Florida and Georgia where as early as March it opens its ovoid corolla.

V. Myrsinites is rather similar to *Vaccinium nitidum* but shows occasionally bristly, serrulate margins about its small, obovate, or lanceolate, more veiny leaves. It also inhabits sandy barrens, growing usually from six to eighteen inches high.

SOUTHERN MOUNTAIN CRANBERRY.

Oxycoccus erythrocarpus.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Huckleberry.</i>	<i>Pale rose.</i>	<i>Scentless.</i>	<i>Georgia to Virginia in the mountains.</i>	<i>June, July. Fruit: August.</i>

Flowers : small, nodding from long, slender pedicels and growing singly along the branches in the axils of the leaves. *Calyx* : small, with four distinct points. *Corolla* : cylindric ; deeply four-parted, the divisions recurved. *Stamens* : eight. *Pistil* : one. *Fruit* : a globose, dark red berry, insipid to the taste. *Leaves* : oblong or ovate-lanceolate, pointed at both ends, or rounded or cordate at the base ; thin ; finely serrate, the teeth projecting bristles. A shrub, one to six feet high with reddish or grey, often pubescent, twigs.

Regarding the many shrubs that spread themselves over the hillsides we cannot doubt that in Nature's great household they serve a variety of uses, and it would seem that we, coming in for our share of all benefits, should learn to know them better. To those that walk little in the woods it is astonishing, in fact alarming, to be with one who nibbles first at this and then at that plant and in the full consciousness that he is simply availing himself of a generously spread meal. He dreads not being poisoned, for he knows the qualities and traits of each one. The bright or dark red berries of this cranberry are knowingly passed by. They in their mountain home are pretty to look at, but most insipid to the taste. Further along there may be something better. The leaves of the shrub when it is in fruit are attractive, being a more vivid, bright green than when it is showing its delicate bloom. They then are pale, often with a copper-like, sunny tint.



THE DIAPENSIA FAMILY.

Diapensiaceæ.

In our range including three genera of tufted or scapose herbs with basal or alternate, simple leaves and which bear perfect, regular flowers, either gamopetalous, or polypetalous, and having their parts in fives.

**GALAX. GALAXY. COLT'S-FOOT.
BEETLE-WEED. (Plate CXXXII.)**

Galax aphylla.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Diapensia.</i>	<i>Cream-white.</i>	<i>Scentless.</i>	<i>Georgia to Virginia.</i>	<i>May, June.</i>

Flowers : small ; growing in a dense, spike-like raceme on a scape from twelve to eighteen inches high and having reddish, scale-like bracts at its base. *Calyx* : five-parted. *Corolla* : with five oblong petals. *Stamen-tube* : ten-lobed at the summit, the divisions alternate with the petals, anther-bearing, the others petaloid and sterile. *Stigma* : three-lobed. *Capsule* : ovoid ; erect. *Leaves* : sometimes four inches in diameter, arising with slender petioles from the base ; orbicular ; deeply cordate, irregularly serrate or crenate, bright green and lustrous and turning in the late season to rich shades of maroon ; evergreen. *Roots* : highly coloured ; fibrous.

As we see the galax blossoms pluming themselves along some shaded bank, we feel that they are a truly splendid assemblage, a veritable milky way ; and, since their name suggests it, we do not hesitate to connect their sparkling sylph-like forms with some of the mysterious wonder we accord to the stars, blink-blinking against their sombre background. It is, however, with the leaves that our thoughts linger longest. Through the plant's range they seem to be everywhere. In the mountainous parts of North Carolina I saw them hugging closely the ground in patches spreading over acres. By the side of woodland paths they raised themselves ; shone from roadside banks and peeped from under rocks. Early in May they are of an exquisite yellow-green. In June more solidly green ; but later in the season, when dingy little capsules have replaced the soft blossoms, they turn to rosy pink, or show rich tones of wine-colour. To many that have never seen the blossoms these leaves are familiar, for the mountain people pick them by the million, and tie them into little bunches of a hundred each which later are sent to florists in different parts of the country.

It was Mrs. Kibbee, the widow of a doctor who lost his life in a yellow fever panic while experimenting with a cot he had invented for the relief of patients, who first realised their decorative value and sent them out from North Carolina. For every bunch of a hundred leaves she received two dollars, and this revenue made up the greater part of the money with which she supported her children. Now, however, this is a matter of history, for the business has passed into the hands of many.

SHORTIA. LITTLE COLT'S-FOOT. (Plate CXXXI.)

Shortia galacifolia.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Diapensia.</i>	<i>White.</i>	<i>Scentless.</i>	<i>Mountains of North and South Carolina.</i>	<i>March, April.</i>

Flowers : terminal ; solitary ; growing on scapes from three to six inches high with scale-like, lavender bracts near the flower. *Calyx* : with five ovate, green



PLATE CXXXI. SHORTIA. *Shortia galacifolia*.

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PLATE CXXXII. GALAX. *Galax aphylla*.
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sepals. *Corolla*: with five petals on the receptacle; wavy on their edges. *Stamens*: ten; the five petaloid and sterile ones smaller than those that are anther-bearing and fertile. *Pistil*: one. *Leaves*: from the base with long petioles; orbicular; serrate, or crenate; thin; smooth, very shiny on the upper surface and turning in the autumn to shades of copper and maroon.

About the sprightly form of *Shortia* there clings a strange story. It is the plant that has interested great men who searched for it until its haunts were revealed and its beauty universally acknowledged. It was the much desired of Dr. Asa Gray, and is as indelibly associated with his memory as is the *Catawba rhododendron* with that of Michaux.

When Dr. Gray was in Paris in 1839 he observed in the herbarium of the elder Michaux an unnamed specimen of a plant. The leaves and a single fruit were all that was preserved of it, and its label stated simply that it had been collected in "les hautes montagnes de Caroline." Its power to arouse Dr. Gray's curiosity was so great that on his return to America he hunted assiduously for the plant in the mountains of North Carolina, but wholly without success. In fact, in an account he gave after his return from these mountains, he said: "We were likewise unsuccessful in our search for a remarkable undescribed plant with the habit of *pyrola* and the foliage of *galax* which was obtained by Michaux in the high mountains of Carolina. The only specimen extant is among the *Plantæ incognitæ* of the Michauxian herbarium, in fruit; and we were anxious to obtain flowering specimens that we might complete its history: as I have long wished to dedicate the plant to Professor Short of Kentucky whose attainments and eminent services in North American botany are well known and appreciated both at home and abroad."

Two years after this, however, Dr. Gray ventured to describe the plant and dedicated it, as he had wished, to Dr. C. W. Short. In this way it received its first public recognition. Henceforth no botanist ever visited the region without searching for *Shortia*. It was courted almost as faithfully as was the philosopher's stone. In the meantime, Dr. Gray had found among a collection of Japanese plants a specimen almost identical with the well-remembered one of Michaux, a coincidence which strengthened his faith in the existence of the American species. It was not, however, until 1877 that it was found, and then quite accidentally, by G. M. Hyams, a boy who knew little about the good luck that had befallen him. He had picked it up on the banks of the *Catawba* river near the town of Marion in McDowell county, North Carolina. Fortunately the father of this boy was a professed herbalist and through a correspondent finally learned the true nature of the plant. It had been collected when in flower. With its aid, therefore, Dr. Gray was enabled to substantiate his original ideas of the genus and to perfect its description. But as for its natural habitat he still maintained that

Michaux could not have been so mistaken ; that the true home of *shortia* must be in " les hautes montagnes de Carolinie." It was quite possible, he argued, that the point on the Catawba where it had been found was an outlying haven to which it might have been washed. So with renewed energy it was searched for through the mountains until discouragement lagged the footsteps of the seekers.

In the autumn of the year 1886 Professor Sargent visited the mountainous region of North Carolina about the head waters of the Keowee River, the great eastern fork of the Savannah, with the object in view of re-discovering *Magnolia cordata*. At Hog Back, a place now called Sapphire, he was met by Mr. Frank Boynton. One evening after dark Professor Sargent came in with his portfolio and took from it, among other things that he had gathered, a leaf. " What is it ? " he asked. Mr. Boynton was about to answer, " It is *galax* " ; but on looking at the leaf more closely, he said he didn't know. During that evening the Professor's mail was brought in, among the letters being one from Dr. Gray, which read as follows :

September 17, 1886.

" MY DEAR SARGENT :

" Would I were with you ! I can only say crown yourself with glory by discovering a habitat—the original habitat of *shortia*—which we will believe Michaux found near where the *Magnolia cordata* came from—or in that first expedition.

" Yours ever,

" ASA GRAY."

Mr. Stiles the editor of " Garden and Forest " who also was present on this eventful evening then said, in a joking way : " That's *shortia* you have in your hand." This proved to be true. The leaf was *shortia*. Professor Sargent had found it, just ninety-eight years after Michaux's discovery, probably near the same spot.

About two weeks later, when this astonishing fact had been fully ascertained by Professor Sargent, he sent word to Mr. Boynton who, with his brother, then went back definitely to locate the plant. They found it growing near Bear Camp Creek in a rather limited quantity, but still enough for them to carry away a bag full of specimens for distribution.

In the following spring Mr. Harbison started out in quest of it. He went beyond Bear Creek to the forks of the rivers. There he saw it growing in great masses, acres, in fact, which were as thickly covered as clover fields. Wagon-loads of it were eventually taken away and still there appeared to be no diminution of its abundance.

So ended the search for shortia, once deemed so rare. Through the further efforts of Mr. Harbison the plant is now well known, and a common one in nursery catalogues. In its wild state it grows best under the shade of kalmias and rhododendrons.

For the accuracy of the first part of its history I am indebted to "Garden and Forest;" for later developments and permission to use Dr. Gray's letter I have to sincerely thank Mr. Boynton. In commemoration of the trip the letter was presented to him by Professor Sargent.



Lake Sapphire.

PYXIE. FLOWERING MOSS.

Pyxidanthèra barbula.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Diapensia.</i>	<i>White or pinkish.</i>	<i>Scentless.</i>	<i>North Carolina to New Jersey.</i>	<i>March-July.</i>

Flowers : numerous; terminal; solitary; sessile. *Calyx* : with five oblong, ciliate sepals and having three bracts underneath. *Corolla* : bell-shaped, five-lobed. *Stamens* : inserted; their anthers opening as the lid of a tiny box. *Pistil* : one; stigma, three-lobed. *Leaves* : very small; alternate, linear or lanceolate; sessile; entire and pubescent when young near the base. A small creeping shrub with ascending, often very leafy branches.

Blossoms! Blossoms! fairly is this little pine-barren beauty covering itself with them in answer to the south wind's whispering that it shall hasten with its bloom. And like a mat we find its interwoven growth spreading

over the ground until its progress is impeded perhaps by the trailing arbutus. Two sweet companions that in early spring unfold at the same time their flowers.

Pyxie is indeed a distinguished little plant, the one relative through our range of galax and shortia. Hardly can another family be found with few members so individual and so charming.



THE PRIMROSE FAMILY.

Primulaceæ.

A group of herbs with perfect, regular flowers having gamopetalous corollas, their parts in four or five and which bear simple, opposite, alternate, whorled or basal leaves. Stamens: inserted on the corolla-tube.

LOOSESTRIFE. (Plate CXXXIII.)

Lysimachia Fràseri.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Primrose.</i>	Yellow.	Scentless.	Alabama, Tennessee and North Carolina.	June, July. Fruit: September.

Flowers: growing in the axils or abundantly in terminal panicles. *Calyx:* persistent; free from ovary, with five sharply pointed and ciliate lobes. *Corolla:* with five ovate, lanceolate lobes. *Capsule:* globose; membranaceous and projecting the slender style. *Seeds:* several. *Leaves:* opposite; narrowly oblong, pointed at the apex and tapering into a short petiole at the base; entire; lighter below than above and covered with many dark-coloured dots. *Stem:* erect; leafy; glandular-pubescent near the summit.

Again and again we come across the loosestrifes during our summer and early autumn rambles. And soon we learn to associate with them their opposite, or whorled, leaves, always entire and their upright, rather stiff manner of growth, and very frequently we look for their petals to be darkly spotted near the bases. In personality the genus reminds us somewhat of the St. John's-wort, but we think of the latter as being usually freer, more prolific bloomers. The old and pretty legend concerning our present plants is that they loose strife; that they act as peace-makers especially among cattle that are quarrelsome. Believing this, people in the old country used to tie such a spray to their yokes before starting out on a long journey.

This one of the group is not common and is very pretty. Especially attractive are its capsules with the free calyx hovering about them.

L. quadrifolia, four-leaved, or whorled loosestrife is one of the most common species and grows through light, dry soil in a very precise and regular way. About its stem the lanceolate, sessile or nearly sessile leaves



PLATE CXXXIII. LOOSESTRIFE. *Lysimachia Fraseri*.
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are whorled at regular intervals, while the solitary flowers with darkly streaked corollas are produced from their axils on thread-like pedicels.

L. terrestris, bulb-bearing loosestrife, also a common plant, but one which prefers to grow in moist meadows, or swamps, sends forth in a terminal raceme a light, graceful spray of deep yellow flowers, their corolla being marked with brownish red. The branching stem throws out many opposite or very rarely alternate leaves which are finely covered underneath with dark spots. Sometimes this one of the loosestrifes shows the peculiarity of bearing from the axils tiny elongated bulblets instead of flowers. Linnaeus even was deceived by them and mistook the plant when in this condition for an erect and terrestrial mistletoe.

L. Nummularia, creeping loosestrife, moneywort, or creeping Jenny, we often see in gardens or trailing over lawns. It is an exotic species, naturalised from Europe and distinctive from its opposite, rounded ovate, rather small leaves and large solitary flowers growing from the axils. All its outlines are simple.

Closely related to this genus is one called *Steironema*, the members of which also mostly pass under the English name of "loosestrife." Among them are such conspicuous members as :

Steironema ciliatum, fringed loosestrife, found in low, moist ground. It has large, lanceolate leaves with slender, ciliate petioles from whose axils the yellow flowers grow on long, thread-like pedicels. Their five-parted corollas have no tubes; but the five lobes are deeply parted and spreading, the apices commonly mucronate and jagged.

S. lanceolatum, lance-leaved loosestrife, may also be sought for in moist soil and when found is known by its narrow, lanceolate leaves, considerably smaller than those of the fringed loosestrife, and which are either petioled or nearly sessile. Near their bases they are sparingly ciliate or naked along the margins, and from the stem's axils thread-like pedicels ascend which bear the yellow flowers.

AMERICAN FEATHERFOIL. WATER-FEATHER.

(Plate CXXXIV.)

Hotttonia inflata.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Primrose.	White.	Scentless.	Florida and Louisiana to New York.	June, July.

Flowers : small, whorled at the joints of clustered and inflated stems and subtended by bracts. *Calyx* : five-parted. *Corolla* : salver-shaped ; five-lobed, shorter than the calyx. *Stamens* : five. *Leaves* : sessile, crowded about the base of the flowering stems; divided into fine, thread-like, entire segments which extend to almost their middle. An aquatic herb, with submerged, spongy stem, eight inches to two feet long.

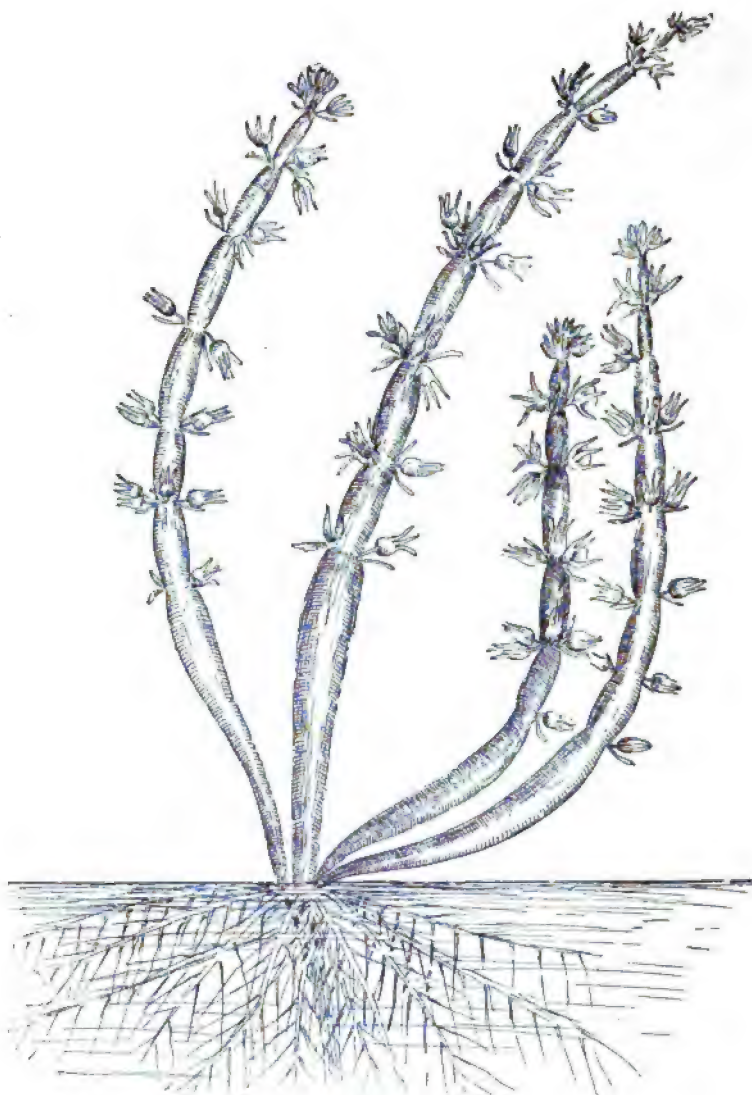


PLATE CXXXIV. AMERICAN FEATHERFOIL. *Hottonia inflata*.
(410)

In ponds or ditches where there is shallow, stagnant water this strange plant raises its inflated peduncles and throws out its queer little flowers. Under the water its floating foliage is suggestive of a seaweed, and so cut is it into fine segments as to make applicable the name of feather. When dried, specimens of the plant have something the look of Japanese prints.

AMERICAN COWSLIPS. SHOOTING STAR. GIANT CYCLAMEN.

Dodecatheon Meadia

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Primrose.</i>	<i>Purple, pink or cream.</i>	<i>Scentless.</i>	<i>Georgia and Texas northward.</i>	<i>April-June.</i>

Flowers: nodding; showy; growing in a terminal bracted umbel, on slender pedicels that curve with the flower but become erect in fruit. *Calyx*: five-cleft, the divisions at first reflexed; persistent. *Corolla*: with five linear, strongly reflexed lobes. *Stamens*: five, the linear erect anthers arranged so as to apparently form a cone. *Pistil*: one. *Leaves*: from the base, clustered, oblanceolate, bluntly pointed at the apex and tapering at the base into the margined petiole; entire; smooth; thin.

"Meadia's soft chains five suppliant beaux confess,
And hand in hand, the laughing belle address;
Alike to all she bows with wanton air,
Rolls her dark eyes, and waves her yellow hair."

This old bit of English poetry, written about the most quaint of the primroses, is said to have represented as beaux the flower's fine stamens as they encircle the one pistil, or Meadia. In the drooping poise of the corolla also there is meaning; for the stamens, considerably shorter than the pistil, are thus enabled to shake their golden pollen directly on the stigma. As its seeds begin to develop, however, the head erects itself that their premature escape may be prevented. It was Linnæus who bestowed the generic name significant of the twelve heathen gods.



THE PLUMBAGO FAMILY.

Plumbaginidææ.

MARSH ROSEMARY. INK ROOT. SEA LAVENDER.

Limnium Carolinidnum.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Plumbago.</i>	<i>Lavender.</i>	<i>Fragrant.</i>	<i>Texas and Florida northward along the coast.</i>	<i>July-October.</i>

Flowers: tiny, mostly solitary growing in one-sided bracted clusters at the end of a high scape branched above as a panicle. *Calyx*: tubular; five-toothed.

Corolla: salver-shaped, with five distinct spatulate petals. *Stamens*: five, inserted on the base of the petals. *Leaves*: mostly from the base; obovate, or oblanceolate; obtuse and tapering at the base into a long margined petiole; entire.

This pretty little plant which is presented as a representative of the plumbago family grows in salt marshes along the coast. There many of them grouped together throw out often through their dainty, tiny corollas a good stretch of misty colouring. These in drying still retain their lavender tint. With everlastings and the bitter-sweet's fruit, they are gathered by country people to decorate the home during the winter. Such bouquets also are said to be of value to keep away moths, while the plant's roots are scraped to apply to canker-sores.



THE SAPODILLA FAMILY.

Sapotaceæ.

WOOLLY BUCKTHORN. (Plate CXXXV.)

Bumelia lanuginosa.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Sapodilla.</i>	<i>White.</i>	<i>Scentless.</i>	<i>Florida to Texas and Illinois.</i>	<i>June, July.</i>

Flowers: small; regular, growing on pubescent pedicels in sessile, axillary clusters. *Calyx*: tomentose, persistent, five-parted. *Corolla*: five-cleft, and having appendages between the lobes. *Fertile stamens*: five, alternating with as many, petal-like and sterile ones. *Berries*: ovoid; small. *Leaves*: alternate in lateral groups; obovate, or obovate-oblong, rounded at the apex and tapering at the base into short petioles; entire; thick; bright green and smooth above, and covered densely underneath with a silky tomentum; persistent. A shrub or small tree about sixty feet high with smooth greyish or brown branches, usually showing spines.

In bloom, the woolly buckthorn is a rather unusual-looking individual with symmetrical and abundant foliage which then is as vividly green and brilliant above as that of the southern magnolia. It also is softly downy underneath. As the leaves are persistent over the winter, we later notice among them a few that have been eaten by insects until only the fine mesh-work of the veins and veinlets remains. So far from repulsing us, however, these grim skeletons show clearly, as in all similar cases, the intricate and beautiful frame-work of the leaves.

B. lycioides, southern buckthorn, also an attractive tree or small shrub, bears minute, greenish flowers growing in axillary clusters on rather long



PLATE CXXXV. WOOLLY BUCKTHORN. *Bumelia lanuginosa*.
(413)

pedicels. On both surfaces its leaves are smooth. Nearly or quite so, also, are the pedicels and calyxes.

B. tenax, a much rarer plant than either of the two preceding ones, inhabits mostly dry soil. Near Jacksonville, Florida, it is found in thickets. On their lower surfaces the oblanceolate leaves are covered with golden brown hairs, while the flower-clusters, which although abundant are not conspicuous, show also this feature.



THE EBONY FAMILY.

Ebenaceæ.

PERSIMMON. DATE-PLUM.

Diospyros Virginiana.

FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
<i>Ebony.</i>	<i>Crown : round ; branches spreading, or pendulous.</i>	<i>20 to 60 feet or higher.</i>	<i>Florida and Texas to New York.</i>	<i>May, June. Fruit : September- November.</i>

Bark : almost black, or tinged with red ; rough, astringent. *Leaves* ; three to five inches long, or smaller ; simple ; alternate with pubescent petioles, broadly-lanceolate or oval, pointed at the apex and pointed, rounded, or cordate at the base ; dark green and lustrous above ; pale and dull underneath ; thick ; ciliate and when young, pubescent. *Flowers* : small ; greenish yellow ; the staminate ones mostly clustered, the pistillate ones mostly solitary, axillary. *Calyx* : four-parted. *Corolla* : bell-shaped ; four-cleft. *Fruit* : globose ; almost sessile ; when green astringent ; becoming sweet, especially after exposure to frost ; persistent until the beginning of winter.

As familiar indeed to the country boy as to the botanist is the persimmon, and in his wanderings he can pretty well follow its course throughout his locality. When its fruit is ripe, it is to him an especially interesting find ; for when had he ever a mouth too weary to crowd it with anything so luscious and sweet ? Not only in the woods and thickets is it found, but sometimes it takes possession of worn-out farm lands. Besides valuing its fruit, the people also know its inner bark to be possessed of astringent and tonic properties which they make use of in curing intermittent fevers. A beverage they make from the ripe fruit is familiarly called "simmon beer," and is pleasing to the taste ; but the brandy procured from the fermented fruit requires much age to make it acceptable to fastidious palates. The wood of the persimmon is useful in the manufacture of shoe-lasts and other small articles. Even its seeds are roasted to use when coffee is not available.

THE SWEET LEAF FAMILY.

Symplocææ.

SWEET LEAF. HORSE-SUGAR.

Symplocos tinctoria.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Sweet leaf.</i>	<i>Deep yellow.</i>	<i>Fragrant.</i>	<i>Florida and Louisiana to Delaware.</i>	<i>March, April.</i>

Flowers : very abundant and growing in sessile, bracted clusters. *Calyx* : top-shaped, the five lobes bluntly pointed. *Corolla* : with five long, narrow segments almost polypetalous. *Stamens* : numerous, inserted at the base of the corolla in five sets. *Drupe* : oblong; one-seeded; nut-like. *Leaves* : simple; alternate; with short downy petioles; oblong, pointed at both ends; entire, or crenate-serrate; bright yellow-green above, very much paler below and covered with a silvery down; somewhat persistent; sweet to the taste; thick. A small tree about thirty feet high, or a shrub.

Of the tribe to which this plant belongs, it is the only representative in North America; and in earliest spring when its clusters of intensely yellow, fragrant flowers appear on the twigs it is most beautiful. Near the limit of its northern range there is then not a leaf to be seen among them. They appear to spring solely from the bare, grey wood. But further southward the leaves are persistent through the winter or, when well sheltered, even so for possibly two years. In drying, these bright, yellow-green leaves with their silvery sheen remain unchanged in colour, or turn perhaps more yellow. To produce this colour, in fact, they are made into a dye. As the English name implies, they are rather sweet to the taste, like sugar. Horses and cows eat them most greedily.



THE STORAX FAMILY.

Styracææ.

Including small trees, or shrubs with simple, alternate leaves and which bear perfect, regular, bell-shaped flowers with gamopetalous or polypetalous corollas and which have their calyxes more or less adnate to the ovaries.

**FOUR-WINGED SNOWDROP TREE. SILVER-BELL TREE.
RATTLE BOX. (Plate CXXXVI.)**

Mohrodendron Carolinum.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Storax.</i>	<i>White.</i>	<i>Scentless.</i>	<i>Florida, Alabama to Virginia.</i>	<i>March, April.</i>

Flowers : growing in loose, drooping clusters along the branches and appearing with, or before the leaves. *Calyx* : short; four-toothed. *Corolla* : campanulate; four or five-parted, the lobes being often crenate. *Stamens* : eight to sixteen. *Pistil* : one. *Seed-vessels* : long-oblong; four-winged and conspicuously tipped with a remnant of the style. *Leaves* : slender-petioled; ovate, or oblong, with pointed apex and mostly rounded or wedge-shaped base; slightly serrate; bright green and glabrous above; pubescent underneath; thin. *Branches* : reddish brown, or greyish; ridged.

The first time I saw the snowdrop tree it grew on a mountain-side high in the Appalachian system, where in beauty and variety the flora is unrivalled in this country. It was well grown, and closed about with other vegetation, but from every side of it could be seen its large, winged pods as they ceaselessly moved with the wind. When in blossom, however, is the time to find it one of our most lovely trees. Its bell-shaped, drooping flowers have all the fragile purity of early snowdrops, and yet are more approachable. They unfold also when there is little apparent animation in the plant world. Insects seldom attack them, and throughout their day they are like sprites gambolling through the boughs. When it became necessary to rename the tree, there was good-natured rivalry between Dr. Britton and Prof. Greene as to the most fitting title with which to honour Dr. Charles Mohr as a dedication. There was then some uncertainty as to how best to fit Dr. Mohr's name into a generic one. Carlomohria and Mohria were among the suggestions offered. Finally, however, the name Mohrodendron, with which we are now familiar, was regarded by many as the most appropriate.

M. dipterum is noticeably different from the silver-bell tree in having the lobes of its corolla cleft almost to the base. In March they are fully blown while the leaves then are only partly developed. The seed-pods, moreover, have but two wings, almost if not quite as broad as the pods.

LARGE-LEAVED STORAX. (Plate CXXXVIII.)

Storax grandifolia.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Storax.</i>	<i>White.</i>	<i>Very fragrant.</i>	<i>Florida to Virginia.</i>	<i>March-May.</i>

Flowers : growing in loose racemes, the pedicels and peduncle covered with a dense tomentum. *Calyx* : with five unequal, pubescent lobes. *Corolla* : with five oblong, narrow lobes somewhat pubescent on the outside. *Stamens* : ten. *Pistil* : one; style : long, exserted; slender. *Capsule* : ovoid; very puberulent. *Leaves* : from three to nine inches long; obovate, or oval with short pubescent petioles,



PLATE CXXXVI. FOUR-WINGED SNOWDROP TREE. *Mohrodendron Carolinum*.
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PLATE CXXXVIII. LARGE-LEAVED STORAX. *Storax grandifolia*.
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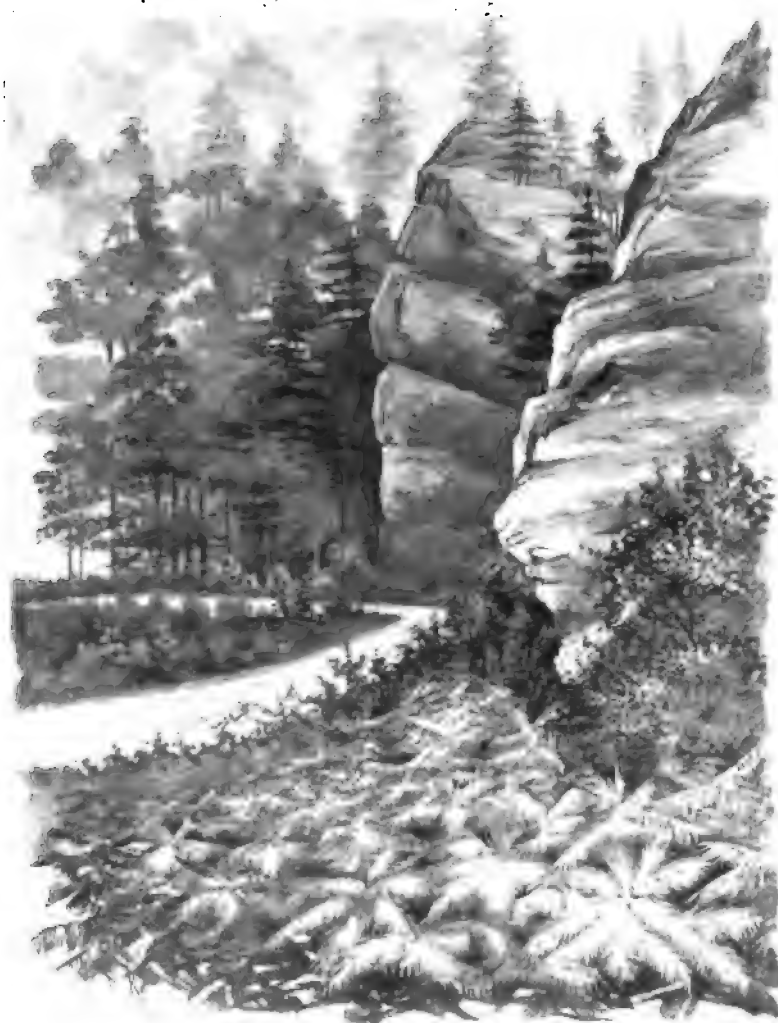


PLATE CXXXVII. STACK ROCK.

Against Rough Ridge on the road from Linville to Blowing Rock leans in bold relief the Stack Rock. One layer piled on another, it stands so high that in looking upward the distance between it and the sky seems to be but slight. Between its crevices small firs make a noble struggle for existence ; but sombre it looks, and few flowers gladden its surface. Covering the ground at its base, however, is a bed of ferns, soft and tender ; a fresh gamboling ground for wide awake rabbits.

(CXXXVII).

pointed at the apex and wedge-shaped, or rounded at the base; denticulate, or roughly and remotely toothed towards the apex, often entire; bright green and glabrous above, white pubescent underneath; thin. A woody shrub, five to ten feet high, with reddish brown, or greyish branches.

With its exquisite, dainty white blossoms and deep green leaves this is indeed one of our fairest shrubs and useful in planting because, considerably beyond the limits of its northern range, it is hardy. The flowers give somewhat the same impression as those of the orange tree, while of their intense fragrance one whiff is enough; too much, an embarrassment of sweetness.

S. pulverulenta, downy storax, is remarkable from the scurfy substance which covers the under sides of its leaves, the calyxes, pedicels and the young twigs. Its leaves, moreover, are smaller and their bloom more abundant than that of the large-leaved storax. At maturity it is interesting to notice how the capsule bursts into three sections, that the single, round seed may escape readily.

S. Americana, smooth storax, as its English name implies is distinguished from the others by its smoothness, although when young its petioles are covered with a scurf. Generally but few flowers are grouped in the short racemes, but they are slender, bell-shaped and unusually pretty. From Florida and Louisiana the range of this one extends to Virginia, but in cultivation it is hardy much further northward.



THE OLIVE FAMILY.

Oleaceæ.

Trees or shrubs with simple or pinnate, opposite or rarely alternate, mostly entire, leaves and which bear small, regular, perfect flowers, in axillary, or terminal inflorescences.

GREEN ASH. (Plate CXXXIX.)

Fraxinus lanceolata.

FAMILY	SHAPE	HEIGHT	RANGE	TIME OF BLOOM
Olive.	Crown: round; branches spreading.	20 to 65 feet.	Florida northward and westward.	April, May.

Bark: greyish brown; furrowed. *Branchlets:* ash coloured and marked with pale, dot-like excrescences. *Leaves:* odd-pinnate, with from five to nine ovate, or lanceolate, taper-pointed leaflets which grow on smooth petioles hardly a quarter of an inch long; sharply serrate, or entire and becoming entire towards the base. Bright green on both sides and glabrous, although occasionally downy in the angles of the ribs. *Flowers:* diœcious; the staminate ones with two or three stamens



PLATE CXXXIX. GREEN ASH. *Fraxinus lanceolata*.
(420)

having linear-oblong anthers; the pistillate ones with persistent calyxes and slender, two-lobed styles. *Samaras*: small, spatulate, notched at their summits.

It was Michaux who said "except the oak no tree of Europe or of North America is so generally useful as the ash;" and we all know how much the timber of the larger species is sought for its superior strength and suppleness. The ashes are, moreover, graceful, beautiful trees which, it would seem, we see now quite as frequently in cultivation as we do in the forest. In the autumn the winged samaras of the pistillate individuals frolic madly about in the breezes, seeking some guarded niche wherein they may lodge and germinate. Never are they borne double as those of the maples. The small size of this tree as compared with the white ash makes it altogether less valuable to choose for timber, but for planting purposes it is a great favourite, being very beautiful. That Michaux named it the green ash was owing to the lustrous, vivid colouring of its foliage, of which both surfaces are nearly alike. In a wild state it follows mostly along the banks of rivers, and in North Carolina is particularly abundant through the middle and upper districts.

While with the early Buddhists it was a question whether or not trees had souls, and therefore, whether it was lawful to perpetrate on them any injury, the ashes seem rather generally to have been regarded by the ancients as being possessed of individual spirits. The Indians believed this of all the trees and thought also that the indwelling ones passed in and out through their holes. Ygdrasil was the mighty ash of Scandinavian mythology; the one said to support the whole universe.

Perhaps we should regret the edict which finally was rendered that trees had no souls, for should many to-day regard them with feelings of deeper sentiment, they would no doubt be protected from much unmerciful injury.

F. Americana, white ash, so called from the ashen colour of its bark, is the largest one of the genus and is generally known by its beautiful spray of light green foliage, which is whitish underneath, forming thereby an attractive contrast in colour. It preferably inhabits a cool climate, although also it occurs through our range as far southward as Florida. Along the riverbanks it grows rapidly; the pistillate individuals becoming particularly gay-looking when their young samaras are apple-green and tinted with pink. Sometimes its wood is used in preference to even that of the white oak.

In point of distinction the white ash may be known by the strictly terminal wing of the samara, the body of which is round and elliptical in outline.

F. Biltmoreana, Biltmore ash, a species of the south only, and one which grows in places from Alabama and Georgia to Tennessee and Virginia, is very strongly suggestive of the white ash. Its upper bark, however, is bluish grey and covered with light-coloured excrescences, while again it may be separated by the pubescence of its twigs and petioles. Along the banks

of the French-Broad and Swannanoa rivers it grows very gracefully and is quite tall. Here it was first noticed with regard to its specific differences by Mr. Beadle, who then bestowed on it its present name.

F. Caroliniæna, water ash, also a beautiful although small tree of deep river-swamps produces ovate, obovate-lanceolate, or elliptical leaves, vividly green on their upper surfaces. Its samaras, the bodies of which are flat, are among the prettiest of the genus, oblong-obovate and having their broad wings tinted with varying shades of pink and purple. As early in the season as March it blooms, and it extends from Texas, Florida and Mississippi to the Carolinas and southern Virginia. In fact, Michaux, the younger, called it Carolina ash because in those states he came across it so frequently.

F. profunda is another ash which grows through southern swamps. Its large leaves are lanceolate-ovate and the samaras about two and a quarter inches long. At their apices they are rounded, or squared, while they gradually taper towards the bases.

COMMON FRINGE TREE. OLD MAN'S BEARD.

Chionanthus Virginica.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Olive.	White.	Fragrant.	Florida northward to Pennsylvania and Delaware.	April-June. Fruit: September.

Flowers: showy; growing in loose, drooping panicles. *Calyx*: small, four-lobed. *Corolla*: with four, slender petals, three quarters of an inch long and but slightly united at the base. *Stamens*: two, rarely three, very short. *Pistil*: one. *Fruit*: bluish purple; oval; glaucous and containing one seed. *Leaves*: large; simple, petioled; ovate, or oblong-obovate with pointed, or rarely rounded apices and being mostly narrowed at the base. *Bark*: brown, or ashen and divided into thin scales. A small tree with narrow, oblong crown at most thirty-five feet high, or a shrub.

Sometimes when exploring new fields for flowers there is a shade of disappointment hovering over the seeker. He feels aggrieved at seeing so many common plants—those that in his own home he has known from childhood. But when he goes to a region where the fringe tree is a native he forgets the presence of more homely bloomers and regrets that it also did not grow close to his own dooryard.

Nowhere does it appear more wonderfully beautiful than in the high mountains of the Alleghanies. Here when the azaleas and rhododendrons are in bloom, its long misty petals hang over many a bank like a bright-coloured mist. There is nothing bold or striking about them, still they fairly fringe the mountains with a soft, poetic bloom. The leaves then have not fully unfolded; but later in the season they appear, vividly green and symmetrical. Although often seen growing well in grounds and parks, it has never the same charm as when in its own wild homes. At the limit of its southern range, Florida, the people gather its bark to prepare a drink for curing the fever called broken bones.

AMERICAN WILD OLIVE. DEVIL-WOOD.

Osmánthus Americánus.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Olive.</i>	<i>Cream-white.</i>	<i>Very fragrant.</i>	<i>Florida to North Carolina.</i>	<i>March, April. Fruit : June.</i>

Flowers : small ; polygamous, growing sessile or on very short pedicels in axillary racemes. *Calyx* : minute, bracted at the base and with four-triangular, sharp-pointed lobes. *Corolla* : salver-form with four short, spreading and rounded lobes. *Stamens* : two, on the corolla. *Drupe* : dark blue ; oblong, or obovate at the end of the bracted pedicels. *Leaves* : simple ; opposite ; narrowly oblong or lanceolate, tapering at the base into margined petioles ; entire ; bright-green and glossy above, pubescent underneath when young, and dotted with black ; evergreen. *Bark* : grey, tinted with red ; scaly. *Inner bark* : cinnamon coloured.

Besides being a tree of usually about twenty feet high, the Devil-wood occurs often much smaller, and is then of shrubby habit. And, since it may cause wonder, it may here be stated that it has brought upon itself its rather forcible common name through the difficulty which is found in splitting its wood. Usually it grows in oak-woodlands or moist, rich soil but a short distance from the coast. Its handsome fruit, a little larger, perhaps, than buckshot, is bitter, has astringent properties, and is not edible. During the autumn the flower-buds are formed in the leaf axils of the year, and here they remain snugly warm with their woolly covering until the early spring. It was by Mark Catesby in the Natural History of North Carolina that the tree was first described.

Our common lilac bushes, Syringas, we must remember, and also the privets, Ligustrum species familiarly known in cultivation, are other examples of the Olive family.



THE LOGANIA FAMILY.

Loganiaceæ.

Including in our species vines and herbs with opposite, simple, entire leaves and which bear regular, perfect flowers with gamopetalous corollas.

YELLOW JESSAMINE. CAROLINA JASMINE. (Plate CXL.)

Gelsémium sempérvirens.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Logania.</i>	<i>Vivid yellow.</i>	<i>Very fragrant.</i>	<i>Texas and Florida to Virginia.</i>	<i>February- November.</i>

Flowers : growing in axillary cymes of from one to six flowers. *Pedicels* : short ; with scale-like bracts. *Calyx* : with five oblong, pointed segments. *Corolla* :

funnel-form, with five spreading and rounded lobes. *Stamens*: five on the throat of the corolla. *Pistil*: one; style four-cleft. *Capsule*: flat; oblong, pointed, grooved on either side. *Leaves*: one to three inches long with short petioles, lanceolate or oblong-lanceolate, tapering or pointed at the base; entire; bright-green and glaucous; evergreen. A woody twining vine.

As interwoven, it seems, with the beauty and sentiment of southern lowlands is the "Jasamer," as it is called by the natives, as is the velvety edelweiss with the history of snow-clad peaks. Early-laden indeed is the warm air of spring with its delicious perfume while, basking himself on its intensely yellow petals, the sly chameleon drowsily opens his rounded eyes. Through woods and thickets it wends its way vigorously and gleams as brightly as does later the Cherokee rose. It is one of the joys of the season, instilling impressions long remembered by those who know it well.

Looking at one of the blossoms critically it is found that it is dimorphous,—that is in one form the stigma is exerted while the anthers are included—and in the other form just the reverse order is apparent. To secure a proper fertilization, therefore, it is necessary for a stigma to receive pollen from stamens of other corollas than its own. The plant's object, of course, in resorting to this device is that self-fertilization may be prevented.

Under the names also of evening trumpet-flower and Carolina wild woodbine is this lovely individual known. Before, or just after, it has flowered, the people collect its rhizomes to make into an extract which if taken with wisdom has been known to cure rheumatism. But it should not be used indiscriminately, as the plant is possessed of a narcotic poison and more than once has been the cause of death.



The low country.



PLATE CXL. YELLOW JESSAMINE. *Gelsemium sempervirens*.

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PINK-ROOT. INDIAN PINK.

Spigelia Marylandica.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Logania.	Scarlet and yellow.	Scentless.	Florida to New Jersey and westward.	May, June.

Flowers : showy ; growing in a terminal, one-sided spike *Calyx* : five-parted, the divisions pointed, linear. *Corolla* : tubular, long, with five spreading lobes. *Stamens* : five, their anthers linear. *Style* : exserted. *Stigma* : small, obtuse. *Leaves* : opposite with small stipules ; ovate or ovate-lanceolate, pointed at the apex and sessile, entire ; nerved ; almost smooth above and pubescent along the veins underneath ; thin. *Stem* : ten inches to two feet high ; ascending ; simple or branched, four-angled ; smooth.

Although for months past the spring has been showing various forms of life and unfolding many blossoms, the pink-root appears gay and beautiful as it opens just on the border of summer. It has none of the tenderness, the timidity of very early blossoms ; it rather strikes a note to key our expectation of the gorgeousness of hibiscuses, milkweeds and lobelias which crown with glory the later season. Mostly it grows in woods, becoming at times quite high, and often responds to the seemingly inappropriate name of worm-grass, although for the very purpose of destroying worms it is in popular use.



THE GENTIAN FAMILY.

Gentianeæ.

In our species herbs with bitter, colourless juice and opposite or rarely whorled, entire leaves, and which bear regular, perfect flowers, either solitary or growing in terminal or axillary clusters.

BOYKIN'S MARSH PINK. (Plate CXLII.)

Sabbatia Boykini.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Gentian.	Deep rose-pink or white.	Scentless.	Georgia to Alabama.	July.

Flowers : one and a half to two inches in diameter ; solitary, or a few growing in a terminal, sessile cluster. *Calyx* : campanulate with oblong-lanceolate, pointed lobes. *Corolla* : one and a half inches wide ; wheel-shaped with eight to twelve large rounded petals. *Stamens* : eight to twelve inserted on the corolla-tube with deep yellow, conspicuous anthers. *Filaments* : short. *Style* : two-cleft, the divisions recurved. *Leaves* : those of the base tufted, lanceolate-oblong or spatulate and tapering into margined petioles ; those of the stem ovate-lanceolate, ses-



PLATE CXLI. ELLIOTT'S SABBATIA. *Sabbatia Elliottii*.
(426)



PLATE CXLII. BOYKIN'S MARSH PINK. *Sabbatia Boykinii*.

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side, bluntly pointed or rounded at the apex, entire, three-nerved, glabrous on both sides; thin. *Stem*: one-half foot high, branching, ascending mostly simple.

Year after year faithfully and without hesitation we may seek, through marshes or dry woodland soil, some known haunt of this exquisite flower and find it rearing its head as sincerely and gayly as it, perhaps, has done since the beginning of things. It is, however, not a common one of the genus, its range being considerably restricted. But its flowers are, of all lovely sabbatias, among the largest and most luxuriantly beautiful; the numerous petals of translucent texture having often an air quite as though they had been bred in a greenhouse. It was in commemoration of Dr. Boykin that the plant received its name.

S. angustifolia, narrow-leaved sabbatia, appeals to us as being also an exquisite species which extends northward as far as North Carolina. While its blossoms are not large, the plant sends them out very abundantly in both lateral and terminal cymes; and to the corolla of five or sometimes six rose-pink petals there is a lively look given by its greenish yellow eye and circling anthers. More than one-half as long as the petals are the linear calyx-lobes. The leaves, which are sessile and linear-lanceolate, or oblong, become small, almost bract-like, as they approach the flower.

S. gentianoides, an inhabitant mostly of pine-barrens through the low country, grows sometimes as high as two feet. Of a deep shade of magenta, even down to the bases, are its large flowers, while their straight and deep yellow anthers are almost a quarter of an inch long. The calyx-lobes moreover are deeply cleft. Near the flower the sessile stem-leaves appear as bracts gradually increasing in size down the stem. At the base of the plant is also a small tuft of lanceolate or oblong leaves.

S. stellaris, sea or marsh pink, the familiarly known member of the genus, extends from Florida along the coast as far northward as Maine. Locally it is much beloved, and called the rose of Plymouth in accordance with the tradition that there the pilgrims first beheld it on the Sabbath day. It has a quaint expression, a starry eye, usually a pink corolla and calyx-segments shorter than, or nearly as long as, the petals.

S. dodecandra, large marsh pink, flourishes near the coast and from July until September unfolds its most beautiful flowers. They are large and solitary, at the ends of the peduncles or branches, either deep crimson-pink, or white delicately bordered with pink, and have from eight to twelve narrowly oblong petals marked at their bases with yellow. The calyx-lobes are narrowly linear and often over half-an-inch long. That the plant's range is extended gives many an opportunity to search for its blossoms either in wet pine-barrens or by the sandy borders of salt marshes.

S. Elliottii, Elliott's sabbatia, (*Plate CXXI*) with its many pure white

and solitary flowers may be found in the sandy soil of pine-barrens, blooming from July until September. It is much branched, both the panicle and branches being scantily supplied with linear, thread-like leaves.

STIFF GENTIAN. GALL-FLOWER. AGUE-WEED.

(Plate CXLIII.)

Gentiana quinquefolia.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Gentian.</i>	Deep blue and white.	Scentless.	Florida and Missouri to Maine.	September, October.

Flowers : growing on short pedicels in axillary and terminal clusters. *Calyx* : with five linear, pointed lobes. *Corolla* : tubular funnel-form ; straight ; spreading at the top with five sharply pointed lobes. *Stamens* : five ; included. *Pistil* : one with a two-lobed stigma. *Leaves* : opposite ; ovate, blunt or pointed at the apex, clasping and slightly cordate at the base ; entire ; vivid, dark green. *Stem* : four inches to two feet high, branching ; four-angled, very leafy.

Not in the spring, or in the summer, do we see the gentians gleaming vividly blue among the blood-roots and Hepaticas, the yellow lilies and uncanny Indian pipes. They blow as a welcome to the autumn, lingering then late, until asters have waved their last, and golden-rods have lost their good looks. Late in August, perhaps a few of the species may come into bloom, but as a general thing they wait until September and then last until frost causes them to succumb. The stiff gentian, a quaintly pretty one among them all, grows in either dry or moist soil and often ascends to a considerable height on the mountains. All along the waysides going up Roan Mountain and following the road to Blowing Rock, we saw its light blue and smaller flowers in contrast with those of the vividly blue and larger ones of the closed or blind gentian, *Gentiana Andrewsii*.

Through these parts of the country the mountain people call it the gall-flower because its juices are so bitter, and ague-weed on account of the extract they make from its roots and employ for curing fever.

G. crinita, fringed gentian, the unmistakable, the beautiful one, lauded by Bryant, and with petals of matchless brilliant blue or, occasionally, white, does not, however, come so late in the season that the "birds are flown." Usually in September it first opens, and for the season, its deeply fringed corolla-lobes have permanently closed before its more sturdy relative the blind gentian has been withered by the frost. Always it is a radiantly beautiful blossom. The plant's lanceolate leaves are too stiff perhaps, but strange indeed it would look with any others. So bitter and tonic an element is contained in the roots that the people use it as a substitute for quinine.

G. Elliottii, Elliott's gentian, bears from one to four rather large flowers at



PLATE CXLIII. FIVE-FLOWERED GENTIAN. *Gentiana quinquefolia*.
(429)

the top of its stem, or sometimes a smaller number appear in the axils of the upper leaves. The straight bell-like corolla of deep blue flares somewhat at its summit, and it is interesting to notice that between its ovate lobes are short appendages, delicately fringed.

G. Saponaria, soapwort gentian, which occurs in wet soil from Louisiana and Florida to Canada, shows often its bright blue and large corolla as late as November. It reminds us strongly of the blind gentian in being club-shaped and almost closed, while we find on examining it that its lobes are but little longer than the appendages between them. This gentian and the species, *villosa*, which follows, also the closed or blind one, seem all to be indiscriminately called through the mountains Samson's snakeroot, and decoctions made from them are taken in great doses as a remedy for dyspepsia and are favourably regarded as powerful tonics to invigorate the system. For, most unhappily, dyspepsia and heart-disease are common among the mountaineers. That the stuff has the effect of putting renewed life in them is quite true, but so little idea have they of quantity that in other ways it causes them harm. They use it for their horses also, and the "yarb doctors" among them make it into powders. The negroes, on the other hand, have really faith that the gentians can cure snake-bite.

G. villosa, striped gentian, or Samson's snakeroot, a beautiful and unusual-appearing plant, when in bloom is known at a glance from other gentians by its oblong, funnel-form, greenish white corolla, which is striped inside very prettily with purple. Its leaves are obovate and mostly blunt at their apices. It is one of the latest bloomers among its relatives.

G. Porphyrio, one-flowered gentian, bears in a solitary way a rather strange-looking flower of blue and green and yellow, the ovate corolla-lobes of which are very spreading and the little appendages which attach them very short, fringed, and considerably brighter in colour. In a simple or branched way it grows, sometimes as high as twenty inches, and abundantly bears sessile, linear leaves.



THE BUCKBEAN FAMILY.

Menyanthaceæ.

In our species aquatic or swamp herbs with simple floating or three-foliolate leaves, entire; and which bear in clusters or racemes regular, perfect flowers.

FLOATING-HEART.

Limnodynastes lucundum.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Buckbean.	Yellow.	Scentless.	Florida northward to Maine.	June-August.

Flowers: growing in an umbel at the summit of the long stem or stolon and from under one of the short-petioled leaves. *Calyx*: five-parted. *Corolla*: wheel-shaped, the five lobes often ciliate and incurved at the edges. *Stamens*: five, alternating with five glands. *Stigma*: two-lobed. *Capsule*: containing numerous smooth seeds. *Leaves*: ovate, or circular with deeply cordate base and growing at the ends of long stems, entire, spongy, often coloured with deep purple.

Altogether associated with the life of the water are the floating-hearts, and curious enough they appear, as from under their rounded floating leaves they bear their small, systematically arranged flowers. As the season advances it is noticed moreover that root-like tubers are formed at the ends of the stalks and under the water's surface, for the plant follows somewhat the same method of reproducing itself as do tiger lilies. Finally these tubers detach themselves from the parent plant and sink to the underlying mud, where snugly they rest until the next season's warm sun coaxes them to send up the plants they hold in readiness.

L. aquaticum, (Plate CXLIV), an altogether larger plant than its relative, is still readily known as belonging to the same order by its similar construction. The circular leaves, with narrow deep sinuses, are smooth and apple-green. Other differences are found in its white flowers and in that the seeds they bear are quite rough.



THE DOGBANE FAMILY.

Apocynaceæ.

Including in our range shrubs, herbs or vines with milky, acrid juice, simple leaves growing in various positions; and which bear flowers with gamopetalous corollas, regular and perfect, and produced in cymes, or panicles.

AMSONIA.

Amsônia Amsônia.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Dogbane.	Blue.	Scentless.	Florida to Louisiana and Pennsylvania.	April-July.

Flowers: growing in terminal cymose-panicles. *Calyx*: minute, five-parted. *Corolla*: salver-form, with five spreading, linear segments. *Stamens*: five, in-

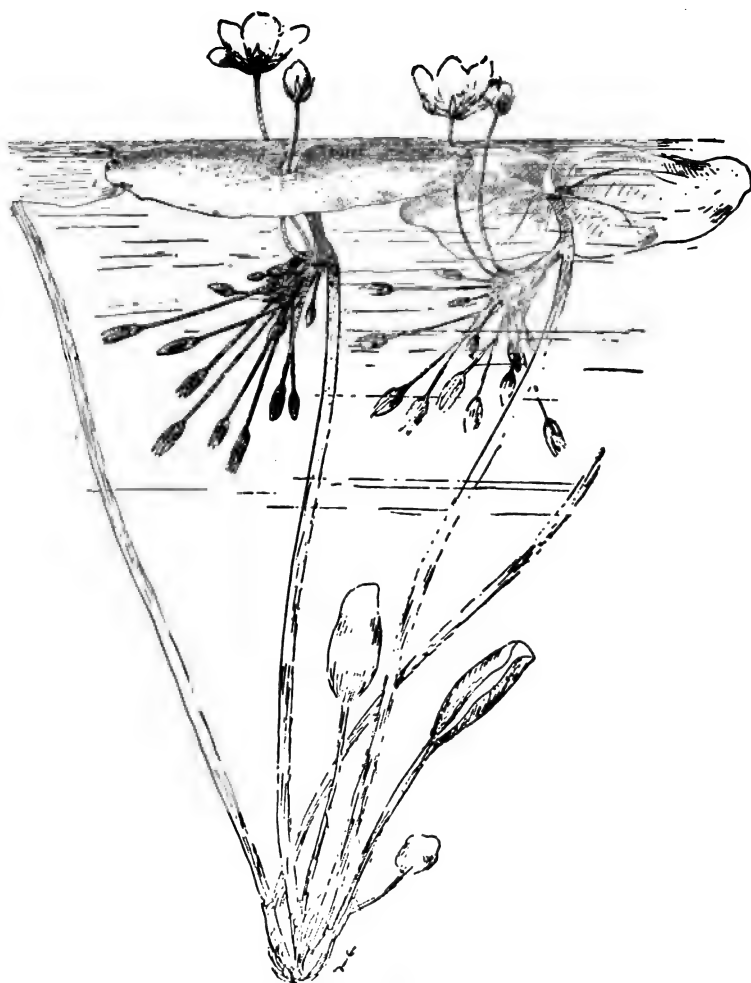


PLATE CXLIV. FLOATING-HEART. *Limnanthemum aquaticum*.
(432)

cluded, inserted on the throat of the corolla. *Follicles*: in pairs two to four inches long, rounded, smooth. *Leaves*: alternate; with short petioles, ovate, or lanceolate, long-pointed at the apex and narrowed or rounded at the base, entire; dark green; glabrous, or sometimes slightly pubescent underneath. *Stem*: erect, two to four feet, simple or branched, smooth.

Commonly through its range we find this herb as it produces gaily its blue flowers, with their sprightly, wide-a-woke look and clinging as though by preference to the moist soil of river-banks; rather than to that of other places.

A. angustifolia (Plate CXLV) blooms as a rule earlier in the season than the preceding species and then unfolds a head of larger and more attractive flowers. Most abundantly on the stem also are produced its very narrow almost sessile leaves, which about their margins are ciliate. Of the south from Florida to North Carolina the plant is a native, where it thrives lustily in sandy soil.

INDIAN HEMP. AMY-ROOT.

Apocynum cannabinum.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Dogbane.	Greenish white.	Scentless.	Florida northward.	July.

Flowers: small, growing densely in terminal and lateral cymes, their short pedicels bracted at the bases. *Calyx*: five-parted, with narrow segments nearly as long as the corolla-tube. *Corolla*: campanulate, five-lobed and bearing within five small, triangular, erect bodies which alternate with the stamens. *Stamens*: inserted on the corolla base. *Follicles*: about four inches long, very slender, curved. *Leaves*: opposite, with short petioles, lanceolate, oblong or ovate-oblong, narrowed or rounded at the base, smooth above, slightly pubescent along the veins underneath. *Stem*: diffusely branched; ascending; glabrous and slightly covered with a bloom.

Among our herbaceous plants we have few more quaint, little flowers or few more enchanting than are borne by the dogbanes. This one grows mostly in fields and thickets and is especially a favourite with honey-bees; as its erect, little flowers are possessed of five nectar-bearing glands. Formerly the genus was thought to be very poisonous to dogs.

A. androsæmifolium, spreading dogbane, or honey-bloom, is the more common species found through open woods and fields. Its drooping, dainty bloom is considerably larger than that of its foregoing relative. Most delicately also are the corollas' revolute, spreading lobes tinted with pink and then veined with a deep, rich colour. These tiny lines in fact are the foot-paths for nectar-seeking bees. The flowers hang moreover from blood-red stalks. Another English name of the plant is "bitter bloom," and it, also, has been credited with being poisonous to dogs.

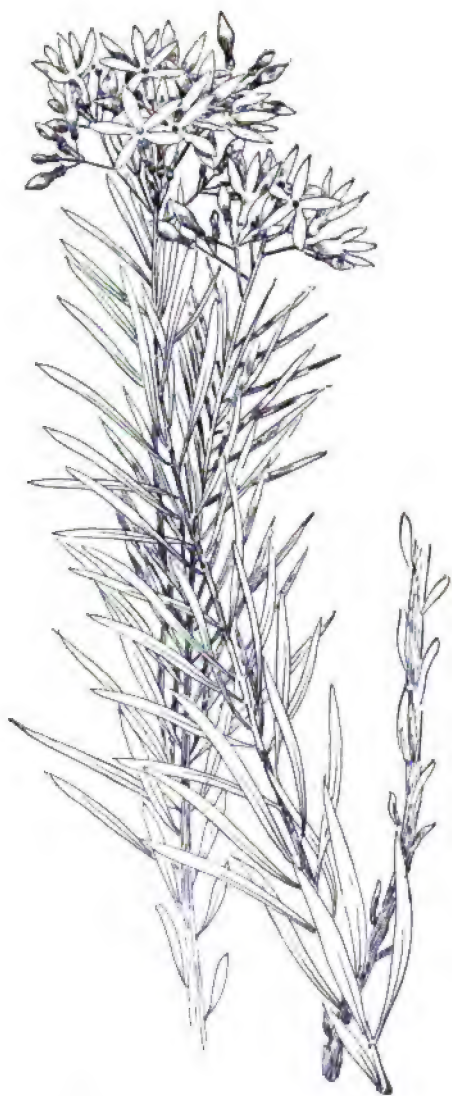


PLATE CXLV. *Amsonia angustifolia*.
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THE MILKWEED FAMILY.

Asclepiadaceæ.

Shrubs, vines or perennial herbs usually with milky juice, opposite, alternate or whorled leaves and distinctively formed flowers which grow in umbels or cymes, and are regular and perfect.

WHITE MILKWEED. (Plate CXLVI.)

Asclepias variegata.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Milkweed.	White and purple.	Scentless.	Florida to Louisiana and northward.	May-July.

Flowers: growing in dense, terminal or lateral, mostly pubescent umbels. *Calyx:* five-parted. *Corolla:* wheel-shaped, the oval segments strongly reflexed. The so-called and central crown composed of five upright, spreading lobes, or nectaries under which are borne five pointed, incurved horns. *Stamens:* five, their fringed tips united and enclosing the pistils. *Antlers:* attached to the filaments by their bases. Pollen in distinct little masses, attached by a thread-like substance. *Pistils:* two, their stigmas united to form the flat, sticky disk. *Fruit:* a pair of pods, enclosing numerous seeds surrounded by silky hairs, and one of which is often undeveloped. *Leaves:* opposite or verticillate, oval, obovate or ovate, bluntly pointed at the apex, pointed or mostly unequally rounded at the base, paler below than on the upper surface; entire; glabrous; thick. *Stem:* one to three feet high; simple, stout, glabrous at maturity, purplish.

Happily for us a good Providence has made these plants very abundant and of wide distribution over the country; for, although they are stigmatised as weeds, where shall we find a genus of more sturdy, vigorous personality, or often with more gorgeous heads of flowers? So intricate in construction are the individual blossoms that not only does the fact make them readily recognisable, but it gives them a unique interest. Primarily, they seem to have been devised to lure into themselves bees, which are necessary to carry the pollen-masses from one blossom to another, as these rest too low in the crown ever to be able of themselves to touch the stigma. But even these clumsy creatures do not give their services for nothing. They have appetites which must be pampered, and so under the hoods is provided a feast of nectar which naturally could not be held by the reflexed corolla-lobes. After sipping to satiety, then, the poor old things move off, often with the filmy threads of the pollen masses entangled about their legs. Unconsciously then they shake them off on the stigma of another flower, and the wheels are set in motion which later in the season show us so many bursting pods and out-floating seeds tufted as softly as with nestle-down.

Usually in dry, open woods we find this species with its milk-white top-



PLATE CXLVI. WHITE MILKWEED. *Asclepias variegata*.
(436)

pling heads of bloom. Sentiment, which, it is said, casts the verdict, calls it a weed. May all such be as beautiful!

A. quadrifolia, four-leaved milkweed, one of the delicate, slender species of wooded slopes and hillsides, bears its leaves in an opposite way or sometimes verticillate in fours. Mostly they are ovate-lanceolate and taper into margined petioles. The flowers on long, thread-like and pubescent pedicels are either pink or white, and but rarely the stem becomes over two feet high.

A. tuberosa, butterfly-weed, pleurisy, or orange-root are among the names commonly used for this most gorgeous member in a more than usually beautiful genus. Its full, abundant heads of flowers continue to open from June until September, when, near and far, in thick rounded clumps, they illuminate the country like balls of orange-red flame. With the exception, however, of its bloom, the plant is coarse and weedy-looking, its alternate, lanceolate leaves growing closely together and being covered underneath, as is the thick stem, with a hirsute pubescence. Even above they are rough to the touch. Unfortunately, through the south the plant is somewhat out of favour, for red-bugs, or chiggers, fairly infest it. Even urchins know this well enough to call out to the uninitiated: "Yer'll git chiggers on yer, if yer don't look out."

A. cinerea, ashy milkweed, exclusively an inhabitant of the south, is found through the pine-barren region from Florida to North Carolina. There its umbels are noticed to be rather sparingly flowered, and the individual blossoms, while purplish without, are within of an ashen hue. Through its opposite, linear and rather rigid leaves, also, the plant has a more scraggly look than is usually presented by the milkweeds. Near Jacksonville, I came on several of them when their very slender pods were bursting. Each of the seeds was found to be winged all around and surrounded by very long, silky tufts of hairs.

A. verticillata, whorled milkweed, which has an extent of range from Florida to Maine and New Mexico and is found generally in dry exposures, is known through its umbels of greenish white flowers produced abundantly from the axils as well as at the ends of its leafy stalks. Moreover the leaves are narrowly linear, sessile and grow in a verticillate way about the stem. Often towards its summit the plant is much branched.

A. incarnata, swamp milkweed, recalls a crimson species, its heads being rather small. It grows in swamps and other low, wet places. Throughout it is quite smooth or merely puberulent near the summit, seldom over three feet high, and is moreover possessed of very little milky juice. Its leaves are slender, lanceolate, and the pods, which grow several in a cluster, are very small but unusually pretty.

Closely allied to *Asclepias* is the genus *Acerates* which also is represented throughout our range and may be exemplified by the 'Florida milkweed, *Acerates Florida*, a beautiful plant with soft green, linear-lanceolate foliage and numerous compact umbels of greenish, purple-tipped flowers; and also by the green milkweed, *Acerates viridiflora*, a somewhat coarser plant with thick, rather rough leaves. Although in their growth and pods they are very similar to the other milkweeds, they may always be distinguished by the unappendaged corona-hoods of the blossoms.



THE MORNING-GLORY FAMILY.

Convolvulaceæ.

In our species herbs with trailing, ascending or mostly twining stems, and alternate leaves entire, lobed, or finely dissected, and which bear regular, perfect flowers with gamopetalous corollas growing solitary, or in clusters.

WILD POTATO VINE. MAN-OF-THE-EARTH.

Ipomœa pandurata.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Morning-glory.	White, crimson centre.	Scentless.	Florida to Ontario and westward.	May-September.

Flowers: two to three inches long, showy and from one to five growing on long peduncles. *Calyx:* divided into five usually unequal divisions. *Corolla:* funnel-form, the limb five-lobed. *Stamens:* included. *Seeds:* woolly. *Leaves:* with long slender petioles, broadly ovate, long pointed at the apex and deeply cordate at the base; entire; dark green on both sides. *Stem:* four to twelve feet long, trailing and twining, rather smooth. *Roots:* fleshy; very large.

On little hillocks and banks or over the dry soil of fields the man-of-the-earth spreads in summer many of its great, white, waxy flowers, effectively spotted at their bases with purple. So luxuriant and delicate in texture are they that many of us are minded of some exotic, while again they are regarded as common things best passed by. For all know the look of morning-glories, as members of the genus are indiscriminately called, and this one appears to be King of them all. They are, however, flowers quite without the shade of mystery.

I. lacunosa, small-flowered white morning-glory, arises from an annual and fibrous root and unfolds blossoms less than, or but little over, an inch long. Its cordate leaves have occasionally three pointed lobes, and although sometimes occurring quite smooth the plant has usually a hairy pubescence.

I. purpurea, morning-glory, the form with which we are mostly familiar



PLATE CXLVII. CÆSAR'S HEAD.

When the flower seekers reached a great crevice in the rock called Caesar's Head, their eyes no longer sought the ground, but rested and wandered over the panorama of far-stretching mountains and the fertile valley of the depth below. Could they have trodden over that broad surface, what discoveries might they have made; what secrets have gathered from Nature's heart?

On the rock's sides grew many mosses passing often in colour from those silvery to others tipped with pink. Green clumps of ferns thrust themselves out from between the layers of crumbling stone, and a dull, dark growth imitating the rock's texture clung to it tightly. Here also a few stunted trees wrestled with uncertainty.

(CXLVII.)

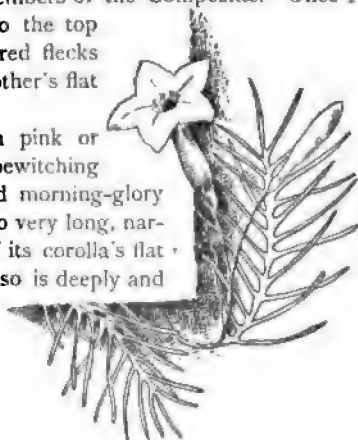
and which freely blooms in pink, purple, blue, white or even variegated tints, has been naturalised from tropical America and is now abundantly escaped from cultivation. Its cordate leaves are entire. While altogether lovely, especially when it lingers in bloom so late that it sees the golden-rods and wild carrots crowding each other for space, it is one of the farmer's trials. He dreads it in his fields as he does the daisy and finds it equally difficult to exterminate.

Convolvulus repens, trailing bindweed, combines a rather large white flower with sagittate leaves, the basal lobes of which are strongly rounded and but slightly divergent. A marked peculiarity also of its flowers is the two ovate bracts which enclose the calyx. In its growth its stem is very twining, and mostly it is found from Florida to Virginia and westward.

Convolvulus spithameus, upright bindweed, is on the contrary of ascending habit and only sometimes slightly twines towards its summit. Its white, solitary flowers are quite large and have their calyxes enclosed by two oval bracts acute at their apices. The leaves occur either oval and obtuse at both ends, or ovate-lanceolate and slightly cordate at the bases. On both sides they are usually pubescent. In rocky, sandy fields it grows and from May until August is rather a constant bloomer.

Quadmoclit cocctnea, the small, red morning-glory, fairly an enchanting little member of the order, casts about bright red flowers, shading to orange in their centres, and shows the limb of its salver-shaped corolla to measure hardly half-an-inch broad. Its lobes also are mostly obscure. At their apices the graceful, cordate leaves are long pointed. Until late, very late in the season, these small blossoms linger, often showing themselves along fences or wound tightly about the stems of members of the Compositæ. Once I saw an individual which had climbed to the top of a tall wild carrot, and very gay the red flecks looked pushing themselves through the other's flat heads of fleecy white.

Q. Quadmoclit, cypress vine, Indian pink or winged-leaved ipomœa, also a most bewitching little vine, is known from the small, red morning-glory by its leaves being pinnately divided into very long, narrow segments, and because the lobes of its corolla's flat limb are ovate and pronounced. It also is deeply and brilliantly scarlet. Both of these Quadmoclitls have been naturalised from tropical America, while about many old gardens from Florida to Virginia this one is seen growing spon-



Quadmoclit quadmoclit,

taneously. Outside of Jacksonville, at an ostrich farm, I saw it blooming in great patches on the ground apparently that the gawky birds, with their love of colour, might have the simple pleasure of trampling it down.



DODDER FAMILY.

Cuscutaceæ.

A large family of slender, twining parasites mostly with minute fringed or crenate scales borne on the tube of the corolla and accepting as hosts various herbs and shrubs to which they attach themselves by means of minute suckers.

COMPACT DODDER.

Cuscuta compacta.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Dodder.	White.	Scentless.	Texas and Alabama to Ontario.	July-September.

Flowers: very small, growing in dense, sessile clusters. *Calyx*: with five oval sepals, crenate on their edges and subtended by similar bracts. *Corolla*: salverform, the five oblong, blunt lobes somewhat shorter than the tube, and bearing narrow, short and fringed scales. *Stamens*: five, included. *Capsule*: oblong, enveloped by the corolla. A yellowish white vine, twining about various shrubs.

"The fair Cuscutaceæ please with laboured elegance and studied ease,
With shy approach they spread their dangerous charms,
And round their victims wind their wiry arms."

—DR. ERASMUS DARWIN.

Even among parasites the dodders have a bad reputation, for they are absolutely without conscience, and moreover their ways are uncanny. In the beginning, after their coiled seeds drop into the ground, they germinate and finally send up stems instilled with the principle of seeking something to twine about and from which, through the means of their suckers, to draw a supply of already assimilated nourishment. As soon as such an unfortunate individual is found, the original ground-stem withers and dies, leaving the dodder therefore wholly dependent for life on the host plant, to which often it wreaks great injury. Frequently we see the dodders' filiform yellowish stems forming an interwoven mesh about some victim and even spreading out to encircle others in their coils. As a genus it is often difficult to distinguish one member from another, as their specific characteristics lie mostly in the

minute scales borne on the corolla, which can only be carefully studied under a strong magnifying glass.

C. rostrata, beaked dodder, is peculiar in bearing flowers rather larger than are usual with the genus and which grow in loose, cymose clusters. The white, campanulate corolla has five rounded lobes with scales about its tube which are somewhat spatulate, fringed at their summits and along the sides. It chooses mostly to suck the life out of composites until they droop and die. In fact, often so tightly does its yellowish stem twine about the host plant as to make it almost invisible, and an effect is produced as though the dodder's small clumps of flowers were protruding from the sides of the one affording support. In the Alleghanies it is most abundant, often being seen on the tops of the highest mountains.

C. arvensis, field dodder, with its copper-coloured thread-like stem, generally twines and retwines itself about the host plant, from which its flowers can be seen growing in sessile clusters. These are small with a broad calyx and campanulate corolla of which the scales are densely surrounded with an irregular fringe. Sometimes the dodders form masses of considerable beauty, for their determination to grow and spread themselves seems indomitable.



THE PHLOX FAMILY.

Polemoniaceæ.

Herbs with opposite or alternate leaves entire, dissected, or lobed, and which bear perfect, regular flowers, growing in cymes, or panicles, their corollas being gamopetalous and the limb five-parted.

DOWNY PHLOX.

Phlox pilosa.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Phlox.	White, pink or purple	Scentless.	Florida and Texas to Ontario.	April-June.

Flowers : growing in terminal cymes on short, pubescent peduncles. *Calyx* : with five awl-shaped teeth, viscid. *Corolla* : salver-shaped, the tube slender and the obovate lobes mostly rounded at the apices. *Stamens* : short, unequally inserted on the tube of the corolla. *Leaves* : opposite ; sessile ; linear or lanceolate ; spreading ; entire. *Stem* : erect ; one to two feet high ; simple or branched, pubescent.

Until I had seen some species of phloxes spread out in dense masses and showing unbroken patches of pure and brilliant colours, I had always

thought them to be rather ugly plants, too stilted and conventional looking to approach the beautiful. But to do away with this idea one has only to see the little one, *Phlox subulata*, covering hundreds of acres, or the crawling one, *Phlox reptans* as it lays over the ground its carpet of bloom. Thus truly they are an enchanting sight. There are also many species of them, each with a more or less distinctive personality. In our study of the flowers we could in no circumstances pass them by.

Phlox pilosa prefers to grow in dry uplands or in sandy soil of the pine-barrens and over a range of considerable extent. Those that I saw in Florida were not branched, and while their very pubescent stems were ascending they appeared unusually weak.

P. reptans, crawling phlox, a beautiful dwarf form, shows its large flowers in one of the delicate pink, or purple, shades and through our range is mostly to be found in the mountains, where on moist slopes or valleys it sometimes covers the ground. Although the flowering stems are ascending, it is to be noticed that creeping and sterile shoots also start off from its base. Their leaves are obovate and narrowed into a petiole, while those of the regular stems are mostly oblong, or lanceolate. In fruit the linear and downy calyx segments become much recurved.

P. ovata, mountain phlox, is another species occurrent through the mountains. In fact on the high peaks of western North Carolina it was so prolifically in bloom in late August that it fairly coloured with its pinkish lavender corolla the roadside banks and brightened immense patches through the woods. Its upper ovate or lanceolate-ovate leaves clasp the stem with slightly cordate bases, while the lower ones and those of the sterile shoots usually taper into long petioles. It is always a very erect plant and at most about two feet high.

P. subulata, ground or moss pink, than which no other phlox is handsomer, spreads over rocky, dry soil a carpet of fine, moss-like foliage, the tiny leaves being linear, lanceolate, and abundant, and from their midst arise the flowering stems. Of the small corolla the lobes are quaintly obcordate and occur in either white, pink or purple. From April until June the little plant blooms prolifically, and it possesses the further charm of being evergreen. Its range extends from Florida to the southern part of New York.

RAVEN FOOTED GILIA. (*Plate CXLVIII.*)

Gilia rubra.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Phlox.</i>	<i>Scarlet.</i>	<i>Scentless.</i>	<i>Florida to South Carolina and westward.</i>	<i>July.</i>

Flowers: very showy, growing in a long terminal and leafy compound raceme. *Calyx*: bell-shaped; with five-linear lobes. *Corolla*: tubular, funnel-form; spread-



PLATE CXLVIII. RAVEN-FOOTED GILIA. *Gilia rubra*.

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ing towards the apex, five-lobed. *Stamens*: five, inserted on the corolla, slightly exerted. *Leaves*: scattered, finely and pinnately dissected, the division acute and filiform. *Stem*: erect; simple, very leafy.

Truly a most charming plant is the raven-footed gilia, as amid its sandy surroundings it stands erect and throws out its peculiarly pink-tinted scarlet flowers. Its stalk when well developed is closely packed with such shimmering bloom, and although of a more delicate texture the flowers appear as gorgeous as do those of many a garden gladiolus. Among the large genus, which is chiefly western in its distribution, this gilia with fine foliage suggestive of a raven's footprint has been chosen for description, as none other is more noticeable.



THE WATER-LEAF FAMILY.

Hydrophyllaceæ.

Mostly pubescent herbs with basal or alternate leaves, palmately or pinnately divided; and which produce regular, perfect flowers growing rarely solitary and in various forms of inflorescences, their parts being in fives.

LARGE LEAVED WATER-LEAF.

Hydrophyllum macrophyllum.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Water-leaf.	Yellowish white.	Scentless.	Alabama and Tennessee northward.	May.

Flowers: growing in a terminal, simple or forked cyme. *Calyx*: deeply five-cleft and covered with rigid, white hairs. *Corolla*: five-lobed, with an appendage opposite each lobe. *Stamens*: five; exerted; filaments slender; bearded; anthers, attached at the middle. *Capsule*: globose; very hairy; enclosed in the persistent calyx. *Leaves*: from the base and alternate on the stem, with long, stout and hairy petioles; pinnately divided into seven to thirteen oval segments, bluntly pointed at their apices and coarsely dentate; pubescent; bright-green above, paler below; thin. *Stems*: one to three feet high; very pubescent and arising from a scaly rootstock.

As well as for other noted inhabitants, we search the trail through moist woods for this water-leaf, which is pretty and has been so named, as others of the genus, not that they are aquatics, but because each leaf is so indented that it might hold water. Usually they are striking-looking plants, perhaps a little weedy sometimes, and possessed of an interesting feature in the feathery hairs of their flower's filaments.

H. Virginicum, Virginia water-leaf, in opposition to its relative, is but a sparingly pubescent plant with its five to seven leaf segments acute at their apices. In the high mountains of North Carolina it is especially generous with its dark violet bloom.

LOOSE FLOWERED PHACELIA.

Phacelia bipinnatifida.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Water-leaf.	Deep blue.	Scentless.	Alabama to North Carolina and westward.	April-June.

Flowers: growing in loose, terminal, slightly scorpioid racemes. *Calyx*: with five linear, hairy sepals. *Corolla*: campanulate; flaring towards the summit and having five rounded lobes, also small appendages in pairs between the stamens. *Stamens*: ten on the corolla, exserted, and having purple hairy filaments. *Anthers*: attached at the middle. *Pistil*: one with a two-branched style. *Leaves*: alternate, with slender hairy petioles, pinnately divided or twice so into from three to seven ovate or oblong segments acute at the apex, cleft and toothed; bright green above; lighter below; thin. *Stem*: one to two feet high, much branched, hairy.

This species of *Phacelia* shows us very little of the scorpion-like coiled arrangement of the flower clusters which is so apparent in some western members of the genus. Its little blossoms also, while suggesting to us those of the water-leaf, have ten little appendages on the corolla which help greatly in distinguishing the group from other flowers. Along shady slopes and by streams it is found, and often towards the base its stem shows the same purplish tone that darkens many of the flowers.

P. fimbriata, fringed or mountain *Phacelia*, grows through the woods from Virginia to Alabama. That the lobes of its leaves are obtuse and the segments of the white corolla deeply fringed at their summits affords us a ready means for its distinction.



THE BORAGE FAMILY.

Boraginaceæ.

In our species, herbs or shrubs with mostly alternate, entire and pubescent leaves, and which bear perfect and regular flowers in one-sided spikes, or racemes which have been coiled in the bud.

As conspicuous members of the Borage family, and yet weeds which have been introduced into this country, we encounter frequently throughout the summer *Echium vulgare*, the beautiful blue-weed or viper's bug-loss, thriving lustily in meadows and by the borders of sandy roads; and the hound's-tongue or gipsy-flower, *cynoglossum officinale*, which while glorifying many waste places with its beauty becomes, through the pastures, most troublesome to the farmer.

SEA-SIDE HELIOTROPE.

Heliotropium Curassavicum.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Borage.	White or blue.	Scentless.	Texas and Florida to North Carolina and Virginia.	May-September.

Flowers: small; growing densely in a one-sided spike on a coiled, often two-parted peduncle. *Calyx:* persistent; with five-pointed segments. *Corolla:* salver-shaped, with five rounded lobes. *Stamens:* included, their filaments short or almost none. *Leaves:* alternate, linear, or oblanceolate, blunt at the apex and narrowed into petioles at the base, or sessile; entire; smooth; slightly glaucous. *Stem:* six to eighteen inches long; diffuse; smooth.



Along the great, spreading seashore, or through saline marshes, where this wild heliotrope blows, it seems a small thing indeed to cover them so well as often it does in places. Its little face is white, with a yellow eye, and curiously changes at times to blue. It also turns that it may follow the sun in his course. By its one-sided spike of flowers which was coiled in the bud we are at once reminded of its relatives in cultivation.

H. Europæum, European heliotrope, has become naturalised in this country or is adventive from Europe and shows white flowers in its solitary, scorpioid spikes and in the terminal ones which are usually in pairs. Again the plant is known by a roughness, produced by fine, very short hairs.

H. Indicum, Indian heliotrope, not infrequently encountered from Florida to North Carolina and about northern seaports, has become naturalised from India, where as in other warm regions it thrives abundantly as a weed.

VIRGINIA COWSLIP. TREE LUNGWORT.

Mertensia Virginica.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Borage.	Light bluish purple.	Scentless.	South Carolina to New Jersey and Ontario.	March-May.

Flowers: showy, growing in short corymb-like racemes. *Calyx-lobes:* blunt; small. *Corolla:* trumpet-shaped, the tube expanded above and considerably longer than the slightly five-lobed limb; not crested in the throat. *Stamens:* inserted on the corolla-tube. *Filaments:* thread-like. *Leaves:* alternate; oblong or oval, those uppermost almost sessile and the lower ones tapering into margined petioles. *Stem:* one to two feet; stout; glabrous; branched or simple.

One might better have remained asleep than to be so unfortunate as to let the spring-time pass without finding somewhere the Virginia cowslip, if located within its range,—as beautiful a plant as one might wish to see. Sometimes it is called blue-bells, although usually the flowers show strongly a purplish tint. Many of those in the clusters raise themselves upright, while others droop their heads. In searching for it one should follow the streams, or cross and recross the moist meadows.

SPRING SCORPION-GRASS. FORGET-ME-NOT.

Myosotis Virgínica.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Borage.</i>	<i>White.</i>	<i>Scentless.</i>	<i>Texas and Florida to Maine.</i>	<i>April-June.</i>

Flowers: growing in one-sided racemes usually bracted at the base, their pedicels mostly erect. *Calyx:* unequally five-cleft, hispid. *Corolla:* salver-form; five-lobed, crested in the throat. *Stamens:* five, included. *Leaves:* alternate; linear oblong, or obovate; sessile or the lower ones narrowed into short petioles; entire. *Stem:* erect; three to fifteen inches high, branched and covered with a hispid pubescence.

Earlier in the season than any other of its relatives, this pubescent little thing unfolds its bloom on dry hillsides. Bright and early one must be to catch a glimpse of those flowers that blow from the lower part of its stems, for usually when it is found only a few small ones are seen tipping the ends of its scorpion-like, slender raceme.

M. lxxa, smaller forget-me-not, recalls the little plant familiarly known; the gentle inspiration to sentiment. Usually it hovers about wet, muddy places, and not the least of its attractions is the crimson-pinky colour of its tiny buds. The racemes bear loosely their dainty, little blue flowers with lively-looking, yellow eyes.

M. palústris, forget-me-not, or snake grass, is only seen through our range as an escape, it being a native of Europe and Asia.



THE VERVAIN FAMILY.

Verbendceæ.

Shrubs or herbs with opposite, verticillate, rarely alternate leaves, and which bear perfect, regular or somewhat irregular flowers produced in terminal, or axillary forms of inflorescences.

To this family belong also some tropical trees, and the chaste-tree, *Vitex*

agnus-castus, sending out its sprays of soft white, or lilac, bloom, a most lovely exotic shrub, is a most striking representative as through our range it occurs, having escaped from cultivation. The so-called French mulberry, *Callicarpa Americana*, a native shrub, is abundant in places throughout the south, and, on account of its highly coloured fruit, very attractive.

LARGE-FLOWERED VERBENA.

Verbena Canadensis.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Vervain.</i>	<i>Purple or white.</i>	<i>Scentless.</i>	<i>Florida to North Carolina and westward.</i>	<i>May-August.</i>

Flowers : growing abundantly in terminal, bracted spikes. *Calyx* : tubular, pubescent, slender, with five thread-like teeth, and longer than the bracts. *Corolla* : salver-shaped ; the tube long ; bearded in the throat, the five lobes notched at the summit. *Stamens* : four, included. *Leaves* : ovate or ovate-lanceolate in outline pointed at the summit, cuneate at the base and tapering into long, margined petioles ; pinnately thrice lobed, the divisions deeply toothed and hairy. *Stem* : two to fifteen inches high, ascending, branched, hairy.

Almost do we regard this verbena as unusual when we find it blossoming through the dry soil of pastures, so very accustomed have we become to the hybrids produced from it and the western *V. bipinnatifida* which now are abundantly seen in cultivation. With its large, showy flowers, it is of course quite different looking from the well simpler's joy, although the plants are closely related.

By the ancients the name verbena, we find, was most generally used to designate various plants connected with religious observances ; and, therefore, we can hardly surround these particular inhabitants of the new world with the sacred lore which no doubt their relatives long years ago instigated.

V. Caroliniana is of different personality from that of the large-flowered verbena and has a rather coarse, weedy look. Its small flesh-coloured flowers are clustered in long slender spikes, and the obovate or oblanceolate leaves are simple and nearly sessile. About their margins they are sharply and irregularly serrate. Quite frequently one encounters the plant in old fields about Jacksonville, or through dry barrens as far northward as North Carolina.

V. angustifolia, narrow-leaved vervain, occurs from Florida to Massachusetts and westward and sends forth a long, linear spike on which are seen many small purple or blue flowers. Its leaves are linear, or spatulate-lanceolate, contracted at the base into short petioles.

V. hastata, blue vervain or simpler's joy, the common species seen so abundantly through moist meadows and in waste places when the composites are in bloom, grows at times as high as seven feet, and is usually

much branched near its summit. Its purplish-blue flowers although very small are often thrust out so prolifically that they form thick masses of colour, while again but here and there a few scraggly ones appear in the spikes. As we see it sometimes in abundance over waste tracts of ground we lose faith in the old superstition that it will thrive near a man's dwelling only. It has long, however, been a favourite with "yarb" and witch-doctors many of whom still claim that it is able to avert disaster. Witches used it in mixing love-philtres and also as a protection to themselves during their incantations. On the contrary also it was of repute "to hinder witches from their will."



THE MINT FAMILY.

Labiatae.

Trees and shrubs, but mostly herbs, with pungent odours, simple, opposite leaves, four-sided stems; and which bear perfect, irregular flowers with labiate corollas growing usually in cymes although also occurring in other forms of inflorescences.

Ever through the summer the mints are before us in our rambles. They crop up almost everywhere; for many of them are common things, often not over attractive. En passant, therefore, but not stopping to scan them closely, they being too well known, we quickly recall:

Glechoma hederacea, ground ivy, or gill-over-the-ground, which in the spring, through open lots and pastures shows constantly its small blue flowers. It is a European, and now most abundantly naturalised in this country. To it are closely related:

Nepeta Cataria, the common catnip or catmint, also a European weed and long famed for its ability to cure cats of their various indispositions.

Marrubium vulgare, still another of the mints which are abundantly seen in waste places. It is a native of Europe and Asia.

Prunella vulgaris, self-heal, or heal-all, blooms constantly from May until October along the waysides, but seldom crowns its thick, leafy spike with more than a few pinkish, purple flowers at the same time. It also is a native of Europe and Asia and in several countries is of repute among the working classes as being able to cure wounds. Its pretty English name is heart-of-the-earth.

Ledum purpureum, sweet archangel, rabbit-meat, or red dead nettle

also from Europe and Asia, has perhaps secured its strong foothold in this country through the transportation of its seeds in ballast. It is a cheerful little thing and blooms in succession from April until October.

Méntha spicata, our lady's mint, more generally called spearmint, and *Mentha piperita*, peppermint, or brandy-mint, are both naturalised in this country and well known inhabitants of wet or sparsely moist soil.

AMERICAN GERMANDER. WOOD SAGE.

Teucrium Canadense.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Mint.	Purplish.	Foliage fragrant.	Florida to New Brunswick and westward.	June-September.

Flowers: growing densely in a long, terminal spike, the lower bracts of which are considerably larger than the upper ones. *Calyx*: campanulate, with five pubescent teeth, the upper three of which are usually obtuse and shorter. *Corolla-tube*: short, the five lobes irregular. *Stamens*: four, in pairs, the anterior pair the longer and exerted between the two upper lobes of the corolla. *Leaves*: lanceolate, with slender petioles and narrowed at the base; irregularly dentate; yellow-green above and silvery velvety below, pubescent. *Stem*: one to two feet high; mostly simple or branched; slender; covered with a greyish pubescence.

No matter how often we run across them, however weedy-looking they may be, there is something about the mints that makes them always welcome. Perhaps it is because their foliage is rich in a volatile oil which causes them to exhale a pungent, invigorating odour. Clean-cut and fresh they usually are, sometimes tall and very handsome, never losing in any case the family resemblance.

This particular one grows in marshes and moist, sandy soil. Through our range it is the commonest of its genus and is named for the Trojan king, Teucer.

BLUE-CURLS. BASTARD PENNYROYAL.

Trichostema dichotomum.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Mint.	Deep blue turning to purple.	Fragrant.	Florida to Maine and westward.	July-October.

Flowers: solitary, or growing in slender panicles at the ends of twice-bracted peduncles. *Calyx*: campanulate; very unequally five-lobed; pubescent. *Corolla-tube*: short, the limb deeply five-cleft. *Stamens*: violet, five, exerted, curved. *Pistil*: one; style two-lobed. *Leaves*: oblong, or oblong-lanceolate, blunt at the apex and narrowed into a short petiole at the base, entire, clammy. *Stem*: slender; stiff, much-branched and covered with a viscid pubescence.

To many the personality of blue-curls appeals as with a subtle magnetism. I have heard it called "the dearest little plant," and quaint it surely is with a look of being elaborately wrought, for a thing so small. Many also delight in its rather peculiar fragrance, while to others it is strongly objec-

tionable. Certainly, however, in spite of these pros and cons a number of its little sprigs together make a most fascinating and odd looking bouquet. To the many bolder plants of the early autumn they form also a strong contrast. The generic name from the Greek is in allusion to the slender filaments.

SHOWY SKULLCAP.

Scutellaria serrata.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Mint.	Blue.	Scentless.	North Carolina and Kentucky to New York and westward.	May, June.

Flowers: showy, growing opposite each other in bracted, terminal racemes. *Calyx:* campanulate, two-lipped; the upper lip with a protuberance or cap on its back. *Corolla:* two-lipped, inflated, the upper lip shorter, arched or helmet-shaped, the lower one spreading and reflexed; lateral lobes attached to the upper lip. *Stamens:* four, concealed in the upper lip. *Pistil:* one. *Leaves:* ovate, or elliptical pointed at the apex and tapering at the base into the margined, pubescent petiole, dentate; deep green above; lighter below; thin; slightly pubescent. *Stem:* one to two feet high; erect; simple or branched, leafy, glabrous below, pubescent above.

Through woodlands or often where bright streams spirt out from the hill-sides, we have a good chance of finding some member at least of this unusually attractive group of mints, and among all of whose American species this one is possibly the most beautiful. In the little cap, or helmet-like appendage which closes down over the mouth of the calyx they possess a quaint characteristic, its purpose being possibly to prevent the escape of the seeds while they are ripening, although the plant is sometimes deciduous. As soon as they have reached maturity the cap usually falls and allows the seeds to drop out at their will.

S. cordifolia, heart-leaved skullcap, is also a showy plant with lively-looking blue flowers borne in densely glandular-pubescent panicles or simple racemes. In fact, nearly the whole plant is pubescent and the corolla even marked with short hairs. From Florida it hardly extends further northward than Pennsylvania, growing usually along the streams' borders and through light, open woodlands.

S. montana (Plate CXLIX) presents to us a species described by Dr. Chapman and one exclusively of the south where it grows through the mountainous woods and fields of Georgia. Of its rather large blue flowers the lower lip quite rivals the upper one in length, and in manner of growth the plant is simple and covered with a soft pubescence.

S. pilosa, hairy skullcap, while flourishing over quite an extended range, appears to grow most luxuriantly in the high mountains of the Alleghanies, although with a range extending from Florida and Texas to New York and Michigan. It is in any place, however, a most graceful member of the genus.



PLATE CXLIX. *Scutellaria montana*.
(451)

Noticeable about its flowers is the fact that the corolla is nearly glabrous, and while the stem is pubescent below it is above quite glandular.

S. integrifolia, hyssop skullcap with its linear, oblong entire leaves and blue flowers having white undersides, is another very attractive individual and continues to bloom from May until August. Often the larger lower lip is longer than the upper, arched one and is much drooped.

Macbridea pulchra.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Mint.</i>	<i>Rose-purple and white.</i>	<i>Scentless.</i>	<i>Georgia and Alabama to North Carolina.</i>	<i>August, September.</i>

Flowers: growing in axillary whorles of mostly four each. *Calyx*: furrowed, the three lobes entire. *Corolla*: long, inflated, two-lipped, the upper one entire, arched, the lower one three-lobed and spreading. *Stamens*: four hairy filaments. *Leaves*: oval or lanceolate, tapering to a point at the apex and at the base into margined petioles or the uppermost sessile, renotely dentate; thin; smooth; dotted. *Stem*: one to two feet, erect, simple, or branching at the summit.

Very excusable one might be for mistaking this pretty plant for a scutellaria, so much does it generally resemble that genus, but on a closer examination it is found that its calyx is not two-lipped, nor has it any little cap to close down over and protect the forming seeds.

OBEDIENT PLANT. FALSE DRAGON HEAD.

Physostégia Virginiana.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Mint.</i>	<i>Crimson-purple.</i>	<i>Scentless.</i>	<i>Florida to Canada and westward.</i>	<i>July, August.</i>

Flowers: growing closely in a dense spike on short, bracted flower-stalks. *Calyx*: bell-shaped with five sharp and equal teeth. *Corolla*: funnel-form; inflated, two-lipped; the upper one arched and broad, the lower one with three spreading lobes of which the central one is pale and dotted with a deeper colour. *Stamens*: four, in pairs on the corolla the filaments pubescent. *Pistil*: one; style, two-lobed. *Leaves*: opposite; lanceolate; serrate; smooth. *Stem*: erect; slightly branched; one to four feet high.

Although we may not be so fortunate as to find the obedient plant in the wildest parts of its range, there is still a chance that, near some cabin's doorway when the women sit silently peeling apples, we may catch a glint of its brilliant colouring. For somehow it has the look and qualities that render it a chosen one for planting with lady's slippers, bleeding-hearts and other plants called old-fashioned. In the east it is probably only as an escape that it is seen. A curious point about the delicate flowers is that they seem to be overpowered by lassitude. They have no elasticity. So when one is turned with the thumb and finger to another than its original position in the spike, it makes no effort to rebound, but remains most obediently wherever it is put.

NARROW-LEAVED SAGE. (*Plate CL.*)*Salvia azurea.*

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Mint.	Blue or white.	Scentless.	Florida to North Carolina westward.	July-October.

Flowers: growing in whorles of from two to twelve in slender elongated racemes. *Calyx:* two-lipped; the upper one entire, ovate; the lower one having two small acute teeth, pubescent. *Corolla:* tubular, two-lipped, the upper lip concave and enclosing the two anther-bearing stamens; lower lip spreading and finely pubescent on the outside. *Style:* pubescent near the summit; twice-cleft. *Leaves:* linear, lanceolate, pointed or obtuse at the apex and tapering at the base into the margined petiole; remotely serrate; glabrous, or puberulent. *Stem:* two to four feet high, simple or branched near the summit, leafy, four-angled, smooth.

The beauty of this plant is best seen in the pure unspotted whiteness of its flowers and in their exquisite softness. When they occur in their blue form they appear to me not nearly so pretty. In the light, sandy soil of Florida and especially about Jacksonville the plant remains late in bloom, but often there it is overshadowed and hidden away by such pronounced beauties as the blazing stars, coreopses, yellow polygalas and even the spider-lilies.

S. lyrata, lyre-leaved sage, is always a distinctive species, from its lyrate-pinnatifid basal leaves. The upper leaves of the stem are frequently entire and grow in pairs rather far apart. Its flowers also are large, rather distant, in whorles and quite showy, with corollas of a beautiful blue, white-spotted in the throat and having a short upper lip.

S. urticifolia, nettle-leaved sage, bears smaller flowers of blue-and-white with noticeably broad and three-lobed lower lips. Its leaves are ovate either abruptly squared at the base or tapering into margined petioles. The borders are crepate or crenate-toothed. As far northward as Maryland the plant's range extends, and it always prefers to grow in light, open woods.

WILD BERGAMOT.

Monarda fistulosa.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Mint.	Pinkish lavender.	Fragrant.	Florida and Louisiana to Maine.	June-September.

Flowers: growing in a terminal head with underlying lanceolate bracts, green or partaking somewhat of the flower's colour. *Calyx:* tubular; with five minute teeth; hairy in the throat. *Corolla:* tubular; slightly curved, two-lipped, the lower lip projecting in a little tip, the upper one hairy and partly enclosing the stamens. *Stamens:* two; protruding; anthers: deep purple. *Pistil:* one, style protruding and two-lobed at the apex. *Leaves:* opposite; petioled; ovate-lanceolate; cordate or rounded at the base, serrate and slightly covered with tomentum, at least on the petioles. *Stem:* two to three feet high; purplish; pubescent.

On a dry mountain-side in North Carolina I pulled one day in July a stem of wild bergamot that measured nearly four feet long, and boldly it



PLATE CL. NARROW-LEAVED SAGE. - *Salvia azurea*.
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stood up among the many surrounding, smaller plants. About its luxuriant heads of bloom there was a pleasing, open appearance, while its soft and pastel-like shade of lavender is but little seen among the wild flowers. Later in the season when its blossoms have perished the remaining bracts of various mottled colours frequently attract the eye. One of the plant's chief charms, however, is its spicy, pungent odour which remains on the fingers for a long time after they have been rubbed against its parts.

All in fact of the monardas, or horse-mints, are more than usually pleasing plants, and from early summer stretch out their bloom until late in the autumn.

M. didyma, Oswego tea, crimson, or American bee balm, the handsomest of the genus and one of our most brilliant wild flowers, chooses to grow in cool, ferny spots among the dense greens of midsummer. Here, its blossoms of as brilliant a scarlet as those of the cardinal flower and its red bracts produce often a startling effect. In rounded, solitary heads they are produced, the long two-lipped corolla having its lower spreading lip three-lobed while the upper one is erect and arched. The stamens are exserted, and the mostly ovate-lanceolate leaves are vividly green.

M. punctata, horse-mint, is known from the others by its large, conspicuous purple, or white-tinted, bracts and its yellowish corollas abundantly spotted with purple or crimson. More than usually arched also is the upper and pubescent lip. In the throat the calyx is villous while its teeth are short and triangular. When well grown it is a striking plant and its flower's construction most interesting.

AMERICAN PENNYROYAL. SQUAW MINT.

Hedeoma pulegioides.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Mint.	Pale purple.	Foliage fragrant.	Florida to Ontario and westward.	June-September.

Flowers : very small, usually six, growing in loose, axillary whorles. *Calyx* : tubular, mostly irregularly five-toothed and villous in the throat. *Corolla* : two-lipped, the lower one three-cleft, the upper one entire or notched. *Perfect stamens* : two; imperfect ones two or none. *Leaves* : small; oblong-ovate, pointed at the apex and narrowed at the base into a short petiole; remotely serrate, paler below than above; smooth or slightly pubescent. *Stem* : six to eighteen inches high, much branched from near the base; pubescent.

Having none better, we mostly call this familiar little plant by the common name of American pennyroyal that it may be designated from its near relative, the European pennyroyal, *Mentha Pulegium*. It is sprightly and vigorous, and moreover good to nibble at as the thirsty and weary one wanders over the dry, sun-baked soil of hillsides. The heavy oil distilled from the plant has various qualities among which not the least known is its obnoxious

iousness to mosquitoes. Children pull and carry about bunches of it to protect them from these insects.

CALAMINT.

Clinopodium coccineum.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Mint.	Scarlet.	Fragrant.	Western Florida.	August.

Flowers: showy; growing solitary, or in clusters of three in the axils. *Calyx*: tubular; somewhat swollen at the base and hairy in the throat; two-lipped the upper one arched, the lower one divided into two sharp-pointed teeth. *Corolla*: long; tubular; two-lipped, the upper lip notched at the apex, the lower one three-cleft, spreading, the central lobe notched and delicately spotted with a darker colour. *Stamens*: four; the longer pair exserted. *Style*: exserted; two-cleft. *Leaves*: small, about one-half inch long, almost sessile, oval, or obovate-oblong, blunt at the apex and tapering at the base; mostly entire, bright green; glabrous. A shrub about two feet high; smooth, or minutely pubescent.

Although more than usually a smooth shrub, we notice that this calamint's outer bark is loose and much inclined to peel in shreds. The plant is also very leafy and grows in a branching way mostly in sandy soil. The bright, scarlet colouring of the flowers makes them unusually gay-looking. Few of us perhaps would instinctively connect their appearance with bed castors, but a likeness in the contour of certain members of the genus to that of the castor has provoked the Greek name. More familiar ones are sometimes called basils. The true plant of that name, however, which inspired the poets is a native of the East Indies.

C. Caroliniæna, Carolina calamint, extends from Florida as far northward as North Carolina and grows as a shrub to, at most, two feet high. Its leafy branches are ascending and covered with a close pubescence; while the white or purplish fragrant flowers are produced, from one to six, in the leaf axils. Conspicuous about their corollas is the dotting of the lower lip's rounded lobes with a dark colour.

HOARY MOUNTAIN-MINT. WILD BASIL.

Koëllia incana.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Mint.	Purplish-lavender, or white.	Fragrant.	Florida to Maine and westward.	July-October.

Flowers: small; numerous; growing in loose, axillary and terminal cymose clusters, their bracts being linear and pointed and covered with a white pubescence. *Calyx*: two-lipped, the teeth awl-shaped and bearded. *Corolla*: two-lipped, dotted with deep violet. *Stamens*: four, exserted. *Leaves*: with very downy, short petioles; ovate, or ovate-lanceolate, pointed at the apex and rounded or wedge-shaped at the base, sharply serrate; bright green and slightly pubescent above, covered underneath with a white, velvety tomentum, the upper leaves often appearing the same on both sides, and smaller ones occurring in the axils. *Stems*: two to four feet high; erect, branched; densely pubescent above.

*Koellia incana.*

rather thin oil which is then used in domestic practice to cure, among other things, headaches.

K. montana, thin-leaved mountain-mint, a smoother individual than the preceding species, is not nearly so pretty although a certain similarity can be noticed between them. Its flowers are almost overshadowed by the number and size of its thin, long-pointed leaves, which, however, are quite without the soft-white tomentum so attractive on those of *Koellia incana*. In fact, with the exception of the ciliate bracts and calyx-segments the plant is throughout nearly glabrous. It inhabits open woods of mostly the mountainous districts of Alabama, Tennessee, Virginia and Georgia.

K. Virginiana, Virginia mountain-mint, or prairie hyssop, bears white flowers, lightly touched with lavender, which have rigid, lanceolate bracts in their involucre, covered with a white tomentum. The leaves are sessile, or nearly so, linear-lanceolate or lanceolate, smooth, or nearly so, the uppermost, however, covered with a dense, white, woolly tomentum. The plant's range is very extended.

K. flexuosa, narrow-leaved mountain-mint, or Virginia thyme, abounds in oak barrens, a most dainty, little member of the family. Its many linear fine leaves give it an open, light look while often the small corollas are white, flecked with dots of lavender or else pale lavender and also similarly marked with a darker shade. As they grow old they drop off considerably; so that often the involucre show but few of them. The whole plant emits little fragrance until after it is dried or pressed between the fingers when its pungent odour is strongly exhaled.

THE POTATO FAMILY.

Solanaceæ.

Through our range shrubs, herbs or vines known by their alternate lobed or variously cut leaves and their regular, perfect flowers with gamopetalous corollas and equal stamens inserted on the tube, alternate with its lobes.

More frequently and in more varied forms than many of us know do we come in contact with the family of the potato, or Irish potato as it is called in the south; the egg-plant, tomato, red pepper and tobacco being also some of its common forms in cultivation. In the garden again the little matrimony vine, *Lycium vulgare*, and the various species of petunias show us others of its phases. As common wayside weeds, we recognise the stramonium, or thorn apple, *Datura stramonium*, long ago brought to this country by the Jamestown colonists for its reputed medicinal properties and therefore still known through New England as the Jamestown, or more familiarly, Jimson-weed; and the apple-of-Peru, *Physalodes physalodes*, a high-growing weedy herb, with foliage similar to that of the Jimson-weed, has abundantly escaped to the waysides from gardens.

Many of the members of the potato family are renowned among poisonous plants, the Jimson-weeds and the night-shades being those which have been most notably harmful.

HORSE-NETTLE. APPLE OF SODOM. (Plate CLI.)

Solanum Carolinense.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Potato.	Purple or white.	Scentless.	Florida to Ontario and westward.	May-September.

Flowers: growing in lateral often cyme-like racemes. *Calyx:* pubescent, five-cleft; persistent. *Corolla:* wheel-shaped with five ovate-lanceolate lobes. *Stamens:* five, filaments very short. *Anthers:* deep orange, erect and connivent into a cone. *Berries:* round; deep yellow or orange, smooth. *Leaves:* ovate-oblong pointed at the apex and squared or tapering at the base into the margined petiole, with deep lobes, spreading at right angles from the midrib, rough and pubescent on both sides and bearing on the under part of the veins sharp-pointed prickles. *Stems:* erect; branched, pubescent and bearing many yellow, sharp prickles.

A weedy, common-enough-looking plant is the horse-nettle as it commonly occurs along roadsides, and therefore it is somewhat of a surprise when it unfolds its delicate, beautiful flower,—for such is truly its starry bloom, with intensely yellow anthers forming for it a cone-like centre. And in the late autumn when plants are dying and the grass even is pale and limp its still greenish or yellow balls of fruit hang gracefully in their racemes. To the night-shades the plant is closely related, and of its genus a number abound in the western prairies.

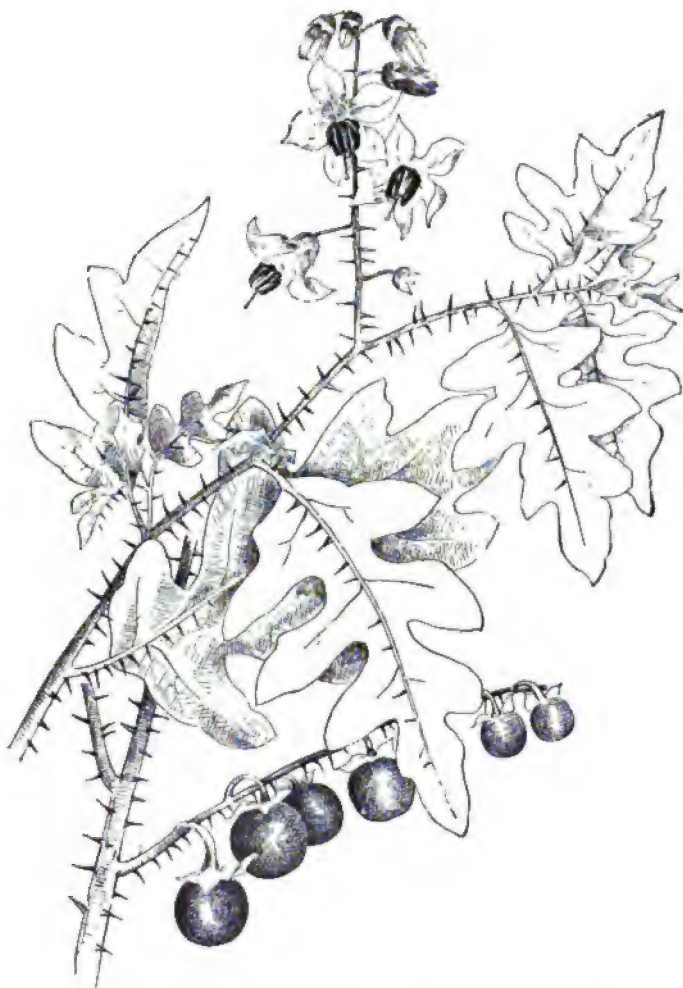


PLATE CLI. HORSE-NETTLE. *Solanum Carolinense*.
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THE FIGWORT FAMILY.

Scrophulariaceæ.

Trees, shrubs or herbs with either alternate, or opposite leaves, and which bear in our species irregular flowers with gamopetalous corollas having their limbs nearly regular or more frequently two-lipped.

Weariless indeed in their desire to bloom and to spread themselves are many showy weeds, members of this family, common everywhere, and which have been introduced into this country mostly from Europe. Conspicuous among such individuals and one which we should sadly miss from along our roadside banks is :

Verbascum Thapsus, the velvet plant, flannel leaf, great mullein or mullein dock. A native of Europe and Asia, it has become generally distributed through many countries, clothing itself with new forms of usefulness, taking different places in legendary lore and changing its popular name to suit almost every locality it enters. Among the earliest signs of spring are its low-lying rosettes of great velvet leaves, from the centre of which shoot up in the second year elongated spikes of bloom sparingly covered with yellow flowers.

V. Blattaria, moth mullein, now well naturalised from Europe, has a more highly refined, delicate personality than many of the foreign weeds which overrun our soil. It is a robust plant with ovate or cordate clasping leaves and elfin flowers which occur in white, pink and yellow, the filaments of all being covered with a dense, purplish wool. They last but a short time, while usually on the same stems are seen short, shiny, reddish buds. Moths and butterflies visit the plant, but in a dried form it is of renown as being obnoxious to cockroaches.

Lindria Lindria, butter-and-eggs, yellow toad-flax or bride-weed, combines in its bloom two shades of yellow and is one of the sprightliest, gayest weeds along the waysides. From June until October its racemes are densely flowered, and although it has been naturalised from Europe it seems to be far better known than the greater number of our indigenous plants.

Verónica arvensis, corn speedwell, and *Verónica agréstis*, garden speedwell, both showing small blue flowers, are also through fields and waste places little European and Asiatic weeds well content and at home in this country.

In cultivation as diverse types of the figwort family may also be briefly mentioned :

Antirrhinum majus, lion's-mouth or great snap-dragon, bearing purplish-red or variously coloured flowers which are quite large, occasionally is seen as an escape from the garden to the roadside.

Digitális purpurea, purple foxglove, fairies' caps, thimbles, gloves and known by over sixty other English names has quite an important place in old-fashioned gardens and also is said sparingly to have escaped from cultivation.

Paulownia tomentosa, paulownia, appears as a tree with a maximum height of about seventy feet, an extreme of the great family of figworts. In the south it has escaped somewhat from cultivation as it belongs to a monotypic genus of Japan. In personality and foliage it is very much like the catalpa tree, but the flowers of its great panicle are deep violet, and they later mature large ovoid capsules, very dissimilar to the long beans of the catalpa.

LYON'S TURTLE-HEAD.

Chelone Lyoni.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Figwort.	Rose-purple.	Scentless.	Georgia northward to Virginia.	July-October.

Flowers: growing closely in a terminal, dense spike. *Calyx*: with five-parted, ovate sepals, ciliate and rounded at their apices, the underlying bracts fringed with white hairs. *Corolla*: two-lipped; inflated; slightly open at the apex; the upper lip concave, the lower one three-cleft, with the central division appearing like a small tongue; bearded in the throat. *Stamens*: five, four fertile and one sterile; filaments, hairy and united into a mass by their woolly anthers. *Pistil*: one. *Leaves*: opposite; with slender petioles; oval or long ovate, pointed at the apex and pointed, subcordate or narrowed at the base; serrate; thin. *Stem*: erect; one to three feet high, simple or branched; glabrous.

Through the mountainous region of western North Carolina and in the late season when this genus of plants throws out its strange bloom, I have found the flowers of this species showing almost every tint of colour from a pure waxy white to a deep pink-purple. It grows in wet, soggy places, often by little brooks and is ever with its small tortoise-like corollas a strange-looking individual. From the anthers, even when but slightly touched, the pollen is showered abundantly.

This species of *Chelone* was named for Mr. Lyon, a botanist who travelled through the mountains and died at Asheville, N. C. In this region where most luxuriantly much that is beautiful of northern and southern flora grows side by side he collected many rare specimens and sent them to the old country. It was indeed he who first brought to the notice of horticulturists the beautiful *Pieris floribunda*.

C. glabra, turtle-head, shell-flower, or balmony, is readily known from

Lyon's turtle-head by its lanceolate, sharply serrated leaves, and again because its bracts are not ciliate. Its corolla also appears to open its mouth more widely and usually is of a pure, waxy white, although also it occurs faintly tinted with pink, while in the high mountains of North Carolina I found it solidly and vividly pink. In the flowering season the plant's leaves are collected and, although very bitter, are used in domestic practice for their strengthening properties.

C. obliqua, red turtle-head, the third species, which is also with us a native, bears oblong, or broadly lanceolate, leaves and slender red or magenta flowers. It is not as frequently met with as the two others.

HAIRY BEARD-TONGUE.

Pentstemon hirsutus.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Figwort.	Purplish.	Scentless.	Florida to Maine and westward.	May-July.

Flowers: growing on short, pubescent pedicels in axillary and terminal thyrus-like inflorescence. *Calyx*: five-parted. *Corolla*: tubular; dilated above, two-lipped, the upper lip with two rounded lobes; the lower one three-lobed, the throat nearly closed and densely villous at its base. *Stamens*: five, included, the fifth one sterile and having its filament closely bearded. *Leaves*: opposite, lanceolate and sessile, or the lower ones oblong, or ovate and tapering into margined petioles; entire or finely dentate; pubescent on the under sides, or glabrous. *Stem*: slender, one to three feet high, covered with a fine pubescence.

After the turtle-heads and the monkey-flower there are in the figwort family few more quaintly expressive flowers than the beard-tongues, as they are commonly called from the hairy, palate-like part of the lower lip which in this species especially nearly closes the throat. The sterile stamen also is bearded, thus heightening their peculiar look. This plant indeed is one of the beautiful and showy ones of woods and rocky banks, and full of spirit it seems when abundantly in bloom.

P. Smallii we found growing near Blowing Rock in North Carolina at an elevation of about four thousand feet. On a first glance there was something about it which reminded me of the shell-flower, *Chelona glabra*. It is a smooth plant or nearly so with large, lanceolate and clasping leaves, and in an open thyrus the flowers grow on slender, pubescent pedicels.

P. dissæctus, which through and about Georgia grows in dry soil, is known from the way its leaves are pinnately divided into linear segments, either entire, or lobed. Of the purple bell-shaped corolla the lobes are rounded and in size nearly equal.

P. Pentstemon, smooth beard-tongue, produces rather few flowers in its open, slender thyrus, and their purple corollas greatly increase in size towards their apices. For the most part the plant is smooth, although again slightly pubescent among the inflorescence.



PLATE CLII. FROM THE SUMMIT OF SATULA MOUNTAIN.

At the approach of twilight we stood on the top-most rock of Satula Mountain about which, as a great unbroken ring, row after row, arise the mountains ; for so is this peak encircled by the great Appalachian system. To our view the most distant ones appeared as though blending with the sky, while those nearer became more clear until was reached the green verdure at our feet. Nor were these mountains simply an undulatory line. Ruggedly and individually formed, each peak had withal a look humane and friendly. Between the rocks were fresh flowers, and higher than all else a pine, stunted and forlorn, raised its ungainly branches.

(CLII.)

SQUARE-STEMMED MONKEY-FLOWER.

Mimulus ringens.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Figwort.</i>	<i>Blue, violet or white.</i>	<i>Scentless.</i>	<i>Texas and Tennessee to Nova Scotia.</i>	<i>June-September.</i>

Flowers : solitary ; axillary ; hanging from slender peduncles. *Calyx* : with five lanceolate teeth. *Corolla* : irregular, cylindric, the limb two-lipped ; the upper lip being divided into two erect or reflexed lobes, the lower one into three, spreading, rounded lobes. *Stamens* : four, on the corolla-tube. *Pistil* : one, style thread-like. *Leaves* : opposite ; lanceolate ; clasping at the base or sessile ; serrate ; smooth. *Stems* : erect ; one to three feet high strongly four-angled ; branched.

Whoever murmured when he found this mimic actor, this little buffoon among the flowers ? Gladly rather we say with delight, " There it is," and slip it from the surrounding grass that we may examine carefully its saucy face. And no one speaks with a smile of those that so quickly fall from the stem. The best way to do that one may get a long look at it, is to carry home the buds and place them in water, when all in good time they will unfold. In swampy places and by streams it has often for its associates other such common members of the figworts as the hedge-hyssops, *gratiola aurea* and *viscosa*, both bearing small yellow or purplish flowers, and the long and short-stalked false pimpernels, *Ilysanthes gratioides* and *Ilysanthes attenuata*, with small, rather insignificant, purplish flowers.

FERN-LEAVED, OR LOUSEWORT FALSE FOXGLOVE.

Dasystoma Pedicularia.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM.
<i>Figwort.</i>	<i>Yellow.</i>	<i>Scentless.</i>	<i>Missouri and Florida to Maine.</i>	<i>August, September.</i>

Flowers : mostly appearing opposite, growing on slender ascending pedicels. *Calyx* : campanulate ; short, with five deeply cleft lobes. *Corolla* : slightly irregular campanulate, with five short, rounded lobes, woolly in the throat and without pubescent. *Stamens* : four, their filaments woolly. *Style* : thread-like, two-lobed. *Leaves* : opposite ; sessile, ovate-lanceolate ; pinnately lobed, the segments being incised or dentate. *Stem* : about two feet high ; much branched ; pubescent and viscid.

Among those plants that we know well are the foxgloves, holding their golden bloom through the autumn and appearing to flourish from the dry, sandy soil of Florida to that of Maine. In the south especially they grow in profusion and are most welcome when elderberries are beginning to ripen and leaves are coiling up to show their undersides already spotted with red. Then here and there their bright glints of yellow appear cheerful indeed. As are some of the gerardias, they are partly parasitic on the roots of other plants and have also not two-lipped but rather irregularly lobed corollas.

These native species through their resemblance to old-world relatives

have naturally it seems had the name of foxgloves bestowed on them—one which has provoked considerable discussion. By many it is believed to be a corruption of folk's-glove; while fairies'-gloves, thimbles, petticoats or caps and many other fantastic names are used interchangeably. Again the name is believed to be derived from foxes-glew, Anglo-Saxon gliew, meaning music and thought to be in allusion to the flowers hung as bells on an arched support, as were those of a favourite, old-time instrument.

D. laevigata, smooth or entire-leaved false foxglove, grows tall and slender and travels not further northward than Pennsylvania or Michigan. As its common name implies, its leaves are entire, with perhaps the exception of the lower ones which are somewhat incised, or dentate.

D. flava, downy false foxglove, we saw abundantly through the mountainous districts of the south where it grew luxuriantly and appeared unusually handsome as its pale yellow flowers gleamed from many a wooded, ferny bank. Often its leaves are pinnatifid,—that is the lower ones, while the upper ones are entire, or sparingly dentate. The plant is very leafy and about four feet tall, while the corollas are large, with broad, expanded limbs, and the lobes of the calyxes about as long as their tubes. From Georgia the plant extends to Eastern Massachusetts.

GERARDIA.

Gerardia filifolia.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Figwort.</i>	<i>Purple.</i>	<i>Scentless.</i>	<i>Florida and Georgia.</i>	<i>September, October.</i>

Flowers: growing on slender axillary pedicels, usually longer than the leaves. *Calyx*: campanulate; with five minute teeth. *Corolla*: funnel-form, expanded towards the summit, the five rounded lobes slightly ciliate on their edges. *Leaves*: abundant; clustered; alternate; thread-like, narrowed at the base, fleshy, smooth. *Stems*: erect; one to two feet high, much branched from near the base, wiry, smooth.

This one of the gerardias, a graceful beauty, we saw growing most abundantly in the sandy soil of Florida. In fact in one place it fairly covered fields and long strips of land along the St. John's banks, transforming the scene into a purple haze with its innumerable blossoms. It there shared the soil with a rayless species of golden-rod, and so closely did their leaves and stems intermingle that sometimes it appeared as though their very dissimilar flowers crowned the same stalks. About them flitted the most beautiful butterflies. Some were solidly yellow like the golden-rods, and others were brilliantly marked and spotted.

It is thus in the late season that the gerardias play their part in beautifying the earth. Some of them are parasites, as has been said, on the roots of

other plants and perhaps for this reason do not take kindly to life in the garden. True wildings they are, delicate and beautiful.

G. tenuifolia, slender gerardia, has also narrowly linear leaves, which, like the long slender pedicels of the flowers, are widely spread. Although slender, the plant appears quite bushy in habit owing to its being branched as a panicle. In woodlands, often those of high altitudes, it grows and from Georgia to Quebec and westward.

G. Skinneriana, Skinner's gerardia, is a rather poor-looking species in comparison with some of those that in Florida attain such ample proportions. Its thread-like, perceptibly rough leaves are usually from a quarter to half an inch long, freely borne on the erect branches, and the pale purple or white blossoms are very fragile. When growing among grasses which border ponds, or in sandy thickets, it has, however, the indelible air of a gerardia. This one does not blacken in drying.

G. divaricata, which from the base branches very widely, shows us filiform, opposite leaves, well spread out from the branches. The flowers are small, with upper lobes erect and short, and they hang from slender pedicels several times longer than the upper leaves. In the low, sandy soil of Florida, where indeed the genus thrives amazingly, it makes its home.

G. purpurea, large purple gerardia (*Plate CLIII*), which from Florida occurs rather generally along the coast to Maine, is truly an exquisite sight near Jacksonville as in wet sandy soil it grows along the banks of the St. John's. Many of the individuals there, we found, were quite four feet tall, and the variety with fascicled leaves fully five feet high, the stems much branched above and rough, as were also on both sides the narrowly linear leaves. The flower's pedicels were stout, about as long as the calyxes the five teeth of which were pointed and spreading. But beyond those small differences was the great beauty of the plant, which lay in its large, pinkish-lavender corolla, inflated at the throat, with five almost equal lobes, wherein were seen two distinct strips of lemon-yellow and many small dark spots.

So much in the way of incentive for a peep into others, as well as this exquisite one of the gerardias.

SCARLET PAINTED CUP. INDIAN PAINT BRUSH.

(*Plate CLIV*.)

Castilleja coccinea.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Figwort.</i>	<i>Scarlet and yellow.</i>	<i>Scentless.</i>	<i>Texas, North Carolina and Virginia, northward and westward.</i>	<i>May-July.</i>

Flowers: crowded in a short, terminal spike. *Calyx*: green or scarlet, tubular, cleft into two oblong lobes, often notched at their summits and pubescent. *Cor-*



PLATE CLIII. LARGE PURPLE GERARDIA. *Gerardia purpurea*.
(466)



PLATE CLIV. SCARLET PAINTED-CUP. *Castilleja coccinea*.

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olla: yellow; very irregular; tubular; two-lipped, the upper one long, erect and arched, the lower one shorter and three-lobed. *Stamens*: four, unequal in length and enclosed in the upper lip of the corolla. *Pistil*: one; style, long, slender. *Floral leaves*: crimson, or crimson-edged, and cut into three to five broad lobes. *Leaves*: alternate; sessile; parallel veined; the basal ones being tufted, oblong or spatulate, entire; and those of the stem, unequally divided into three or five deeply cleft, linear segments. *Stem*: one to two feet high, purplish grey, pubescent, leafy.

This flaming beauty, it will surprise many to learn, is a parasite on the roots of various herbs or even shrubs. And for this reason, although its brilliant bloom makes it desirable, it is impracticable to cultivate it, although in ignorance of this characteristic many nurserymen have sold its seeds. In North Carolina it grows in thin, light soil on the mountain slopes, often with kalmias and rhododendrons, or through the meadows where grasses and tall timothy stalks are nodding their heavy heads. On Grandfather and Roan Mountains it sets ablaze many a high slope with the wondrous colouring of its floral leaves and calyxes. For in these parts is the spirit of the flower seen; its corolla is pale yellow, often insignificant.

WOOD BETONY. LOUSEWORT.

Pedicularis Canadensis.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Figwort.</i>	<i>Light yellow and purple.</i>	<i>Scentless.</i>	<i>Florida to Nova Scotia and westward.</i>	<i>March-June.</i>

Flowers: growing in a dense, rounded, leafy spike which in fruit becomes elongated. *Calyx*: tubular; cleft at the apex on the under side. *Corolla*: tubular; two-lipped, the upper lip well arched and with two minute teeth at the sides of the apex where it also is bearded; the lower one, three-lobed and crested above, the side lobes being larger than the central one. *Stamens*: four, in the upper lip of the corolla. *Leaves*: alternate, lanceolate, or oblong, and pinnately divided into many entire, or crenate fine lobes. *Stem*: six to ten inches high, simple, hairy and bearing leafy runners.

We have seen in the figwort family how many of its members have curious expressive faces, resembling animals quite as much as often pansies take on the look of old men and women. The chelones are like tortoises; the monkey-flower tells its own story; and here, moreover, is the wood betony rearing its slender corolla as the head of a walrus and even with two miniature projections in imitation of his tusks. Most often the upper lip of the flower is purple and the under one pale red, but also they occur of solid colours, either yellow, purple or red. Through shady woods, therefore, one may find a patch of yellow bloomers and not far distant a group of others showing not a vestige of that colour. It is ever a strange-looking plant with fern-like, rather coarse leaves and is pretty as long only as the bloom endures.

THE BLADDERWORT FAMILY.

Lentibulariaceæ

Aquatic or bog plants with leaves tufted about the base or produced on floating stems, and which bear on erect scapes or scaly bracted stems, either solitary or in racemes, irregular and perfect flowers, with two-lipped corollas.

HORNED BLADDERWORT.

Utricularia cornuta.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Bladderwort.	Yellow.	Very fragrant.	Florida to Newfoundland and westward.	June-August.

Flowers: showy; irregular; one to six growing in a raceme at the end of a naked, stout scape, their pedicels bracted. *Calyx*: with two nearly equal lobes. *Corolla*: two-lipped; broad; the lower lip large, somewhat helmet-shaped, with pubescent palate in the throat and, projecting at the base, a spur; the upper one erect, smaller and obovate. *Stamens*: two. *Leaves*: none, or reduced to a few scales on the scape. Occasionally also there occur on the rooting stems a few bladder-bearing, entire leaves.

Differing from the purple bladderwort that grows in water, this one, being a terrestrial species, grows by the ponds' borders or in bogs where its scapes root freely in the mud, and it attracts us by the shining brightness and intensely sweet fragrance of its unusual flowers. The bees also find them, for the long curved spur projected by the large under-lip is rich in nectar.

U. subulata, zig-zag, or tiny bladderwort is distinct from its relatives through the zig-zag line formed by its raceme of rather numerous although small yellow flowers. It also is a terrestrial species of sandy, wet soil and seldom produces on its few leaves any bladders.

U. purpurea, purple bladderwort, is one that grows in water and sends out from the base of its scape of violet-purple flowers floating and finely dissected leaves which are upheld by many small bladders.

The Utricularias are a most interesting group, some members, like those first described, being provided with a few bladder-bearing leaves or rootlets under the surface of the ground. Again the aquatic species usually root in the mud, or, rarely, float free wherever the wind or current wills, and are provided with finely divided leaves which are literally covered with small bladders. The bladders have an orifice or mouth which is closed by a little lid and is furnished also with projecting bristles, the function of which is to create a sort of current whereby water and small insects may be induced to



PLATE CLV. YELLOW PINGUICULA. *Pinguicula lutea*.

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enter. More than one hundred and fifty species are recognised, widely distributed, of which about twenty occur in the United States.

U. inflata, swollen bladderwort, one of the most curious of all, bears at about the middle of its scape a whorl of leaves with swollen petioles, which are very finely dissected, as well as almost covered with bladders. It is thus doubly provided with a means of moving over the waters of ponds where it grows. From Florida to Maine it occurs, and mostly near the coast.

YELLOW PINGUICULA. BUTTERWORT. (Plate CLV.)

Pinguicula lutea.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Bladderwort.	Bright yellow.	Scentless.	Florida and Louisiana to North Carolina.	February-April.

Flowers: solitary; nodding, or ascending; growing at the end of a pubescent scape from six to fourteen inches high. *Calyx*: parted into five oval pubescent lobes. *Corolla*: funnel-form; inflated and projecting backward a nectariferous spur; while somewhat two-lipped, the limb apparently divided into five, obovate lobes, deeply cleft at their apices, and veined in the throat with brown. *Stamens*: two. *Leaves*: small; one to one and a half inches long growing in a rosette about the base, ovate or oblong-obovate, usually pointed at the apex, entire, with involute, sensitive margins and covered on the upper surface with a viscid secretion. *Roots*: fibrous.

Raised sprightly on naked scapes and where the soil is moist we find commonly through open pine-barrens the bright blossoms of the butterwort. Here where it has made, among palms and grey moss, its natural selection, it spreads also flatly on the ground its rosette of curious leaves. It avoids, so it would seem, places overgrown with tall grasses or other verdure which would prevent the sun and air from touching it and providing it with nourishment. It also sustains its good condition in another way. The leaves are very fat, greasy, in fact, to the touch, and by this greasiness small insects are detained on their surface until the sensitive leaf-margins roll inward and hold the intruder in the grim clutch of death. The prey thus secured is then assimilated after the manner of most insectivorous plants.

P. elatior, which grows in swamps or along the margins of ponds from Florida to North Carolina, bears a purple flower, often fading to white as it matures. Its small leaves, tufted at the base of the scape, are spatulate ovate and clammy pubescent.

P. pumila, a miniature species seen mostly in the moist, sandy soil of Georgia and Florida, is known by its small, light violet or purple flowers and tuft of rounded or obovate leaves lying at the base of the scape.

THE BROOM-RAPE FAMILY.

Orobanchææ.

A group of root parasites with leaves reduced to alternate scales, and which bear perfect irregular flowers, their corollas being gamopetalous and two-lipped.

SQUAW-ROOT. CANCER-ROOT.

Conopholis Americana.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Broom-rape.</i>	<i>Pale yellow.</i>	<i>Scentless.</i>	<i>Florida to Maine.</i>	<i>April-August.</i>

Flowers : perfect ; numerous ; growing in a dense, very thick spike. *Calyx* : tubular ; four-toothed with two bracts under the base. *Corolla* : two-lipped ; the upper lip arched and notched at the summit ; the lower one short and three-toothed. *Stamens* : on the tube of the corolla ; exserted. *Stems* : four to ten inches high clustered from the base and covered with whitish or light brown stiff scales ; fleshy.

This curious, light brown herb, the only species of eastern North America, finds for us perhaps its chief attraction in that it opens its bloom in earliest spring. Then the pale yellow flowers peep out from its scaly cone. It lives in the woods and is a root parasite at the bases of trees, of which it seems to choose almost exclusively the oaks.

Leptamnium Virginianum, beech drops, more showy in its purple-and-white, striped bloom than the squaw-root, chooses to grow on the beech rather than the oaks. Mostly its complete, upper flowers are sterile while below are the cleistogamous and fertile ones. The stem is branched in the way of a panicle, and sometimes it becomes quite high.

Orobanche ramosa, hemp broom-rape, another strange-looking yellowish parasite, thrives abundantly in the south on the roots of hemp and tobacco. It is, however, not a native but adventive from Europe.

O. minor, clover broom-rape, herb-bane, or more viciously known as hell-root, is also a naturalised plant and parasitic on the clovers, vetches and wild carrots. It also is yellowish brown, the faintest tinge of blue showing sometimes in the limb of its corollas.



PLATE CLVI. TRUMPET VINE AND COTTON FIELD.

Once, bordering a field where cotton was in blow, we saw that a trumpet vine had climbed a high tree and had thrown out, as though in the spirit of rivalry, many of its bright blossoms. Indeed the larger bloom of the cotton seemed to hang its head and looked pale enough when placed by the other's side. But over the field and especially from where the flowers shone en masse against the leaden colour of a thatched hut, their pinky tint appeared intensified, almost rosy. Such are some of the scenes of the low country.

(CLVI.)

THE TRUMPET-CREEPER FAMILY.

Bignoniaceæ.

In our species woody vines and a tree with opposite, simple or two to three foliate leaves, the terminal leaflet mostly ending in a tendril; and which bear large flowers in cymes or panicles, their corollas gamopetalous, with much expanded tubes.

CROSS-VINE. TENDRILLED TRUMPET-FLOWER.

Bignonia crucifera.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Trumpet-creeper.	Orange and yellow.	Scentless.	Florida to Virginia and westward.	April-June.

Flowers: showy; growing on pedicels in cymes. *Calyx*: membranous; cup-shaped, with five slight teeth. *Corolla*: campanulate, the tube much inflated, the limb showing five rounded lobes. *Fertile stamens*: four, two of which are longer than the others. *Anthers*: smooth. *Leaves*: with petioles; twice foliolate and terminated by a branching tendril; the leaflets ovate, or oblong, long pointed at the apex and cordate at the base. A woody vine, climbing sometimes fifty and sixty feet high.

Once I saw this beautiful vine when green and tender, as it had wound and rewound itself about the stem of a great tree until hardly a vestige of the grey frame-work could be seen. On the landscape, therefore, the oak appeared simply a towering mass of green and gave by the sight of its boughs none of the customary assurance that it would not fall over, even without warning. The innumerable, bright flowers gleamed like miniature lanterns through the whole. A startling sight it was, quite worthy of the hazy air and sunshine which brought it forth. The plant is called cross-vine from the cross formed by transverse sections of the stem and is in the United States the only known species.

Campsis or *Tecoma radicans*, trumpet-flower, vine, or creeper, is over the country one of the best known vines, for considerably further northward than its natural range it has become familiar through cultivation. In the moist woods of the south it is found climbing over trees, fences and many old stumps, about which it forms graceful festoons. When it meets no support it lies prostrate on the ground, for it has no tendrils with which to climb as the cross-vine. Its leaves are pinnate, the leaflets often pubescent and numbering from seven to eleven. Through May and June or as late as September, and often near the wistaria, its long, funnel-shaped corollas of bright scarlet

touched with yellow produce wonderful, decorative effects wherever it grows. By Mr. W. R. Smith we are told that Europeans call it the "humming-bird vine," as it is so much visited by these birds. But the southern natives have no such poetical idea of it: they call it devil's shoestrings because its interlaced growth hinders their progress, or even more contemptuously, "cowitch," in reference to the belief that when cows eat of it the effect on their milk is harmful. Quite generally they regard it as poisonous. In fact they approach it with much more caution than they do poison ivy.

Catalpa Catalpa, Indian bean or candle-tree, represents the trumpet creeper family as a large, well rounded tree which in a wild state occurs through the woods of the gulf states and especially along the river-banks of Florida and Georgia. But northward in many places it is now abundantly planted. From its relatives, the vines, it differs in having large, simple leaves, cordate in outline and entire. When covered in June with great, terminal panicles of exquisite white flowers, touched with yellow and dotted with purple, it seems that it must attract the attention of all, even those flower seekers whose eyes are chained to the ground, and again in the late season it is very conspicuous, being hung with slim pods sometimes a foot long.



THE ACANTHUS FAMILY.

Acanthaceæ.

In our species herbs with simple, opposite leaves, and which bear perfect, nearly regular or irregular flowers their corollas being gamopetalous, either five-lobed or two-lipped.

SMOOTH RUELLIA.

Ruellia strepens.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Acanthus.</i>	<i>Blue.</i>	<i>Scentless.</i>	<i>Texas and Florida to Pennsylvania and westward.</i>	<i>May-August.</i>

Flowers: mostly solitary or occasionally a few together growing from the axils of the leaves. *Calyx:* five-parted, the segments linear-lanceolate, pointed, covered with fine white hairs. *Corolla:* salver-shaped, the tube long, and the limb spreading in five rounded lobes, entire or slightly notched at the apex. *Stamens:* four. *Pistil:* one; style, recurved. *Leaves:* oval, or oblong, pointed at the apex and narrowed at the base into margined petioles, delicately ciliate along the margin and sparsely covered above and along the veins below with fine hairs. Smaller leaves also often growing in the axils. *Stem:* one to four feet, simple, or branched, erect four-angled; smooth.

Many a dry, bare spot through the thickets shows a gleam of blue which when approached is found to be these attractive flowers, boldly thrust forth from the plant's leaf axils. When near by there grow also the starry campion, the fire pink with perhaps the first of the golden asters and a large army of sparges, the company is at once gay and brilliant, of pure and bright colours. Hardly have we had another flower with personality anything like the ruellia's. As we travel northward it is one which we sadly miss from the flora.

R. ciliosa, hairy ruellia, while very similar to its relative, is covered almost throughout with a hairy pubescence, and a specific difference is that its thread-like calyx segments exceed the capsule greatly in length.

Dianthèra Americàna, dense-flowered water willow, shows us another form of the Acanthus family and is one which we find growing in shallow water or very wet places. The corolla of the violet or nearly white flower is slender and strongly two-lipped, the upper-lip covering the two stamens, while a number of them grow in a head-like spike at the end of a long, axillary peduncle. Its linear-lanceolate leaves suggest somewhat those of a willow.



THE MADDER FAMILY.

Rubiaceæ.

Trees, shrubs or herbs with mostly simple, opposite, stipulate leaves, rarely whorled, and which bear perfect, regular, dimorphous or even trimorphous flowers with gamopetalous corollas, their stamens inserted on the throat or tube and alternate with the lobes.

THYME-LEAVED BLUETS. (Plate CLVII.)

Houstonia serpyllifolia.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Madder.	Deep blue, with yellow centre.	Scentless.	South Carolina and Tennessee to Virginia.	April-August.

Flowers: dimorphous; terminal at the end of thread-like, terminal and axillary peduncles. *Calyx:* four-lobed. *Corolla:* salver-shaped, with four oval, spreading lobes, the tube slender. *Stamens:* four, on the corolla. *Pistil:* one; style, compound. *Capsule:* globose, depressed at the top and being above free from the calyx. *Leaves:* very small; orbicular, or broadly ovate, obtusely pointed at the apex, and abruptly squared or terminated by the petiole at the base; those occurring near the flower being often longer and narrower; smooth. *Stems:* creeping; prostrate; branching; glabrous.



PLATE CLVII. THYME-LEAVED BLUETS. *Houstonia serpyllifolia*.
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Often on the high mountains these tiny bluets cling so tightly to the ground that they make but little showing even when in bloom. They creep in under damp rocks and here cover many a cool and shady place with their baby blossoms. In such spots, or even those more exposed, we found it in the early autumn near the summit of Roan Mountain, still blooming sparingly. Sometimes it mingled with, or grew beside, the mountain heather, *Dendrium buxifolium prostratum*, when its tiny leaves often formed close mats; dainty, sweet companions they seemed on this great peak.

H. purpurea, large houstonia, a southern species and also especially of the mountains, is distinctively marked by its broad, ovate or ovate-lanceolate leaves and because its purple or lilac flowers grow in terminal, cyme-like clusters. It lingers late in bloom, and while very attractive has hardly the daintiness of the already-mentioned species and the one that follows.

H. coerulea, bluets, innocence, Quaker ladies, or bonnets, is much more generally distributed than the mountain species—therefore better known and of more widely acknowledged charm. It is readily distinguished by many up-pointed, obovate, oblong or spatulate leaves of which only the lower ones narrow into petioles. The species, besides, grows erectly, often many of the plants together producing through moist, grassy places a most enchanting stretch of ethereal blue.

H. angustifolia, narrow-leaved houstonia, occurring westward and from Florida to Tennessee, is peculiar in that its linear leaves grow thickly in clusters and because its white, or purplish, flowers are produced abundantly on short pedicels in cyme-like clusters.

Most of these quaint flowers are what is called dimorphous,—that is, they occur in two forms. Under a lens we see that in certain of the flowers the pistil is long and the stamens short, while in others just the reverse order is evident. This is not so without a purpose. It is simply a scheme of arrangement by which self-fertilization may be prevented.

BUTTON, OR RIVER, BUSH. GLOBE FLOWER. HONEY-BALLS.

Cephalanthus occidentalis.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Madder.	White.	Very fragrant.	Florida to New Brunswick and westward.	June-August.

Flowers: small; sessile; clustered in a rounded head. *Calyx-tube:* with four, blunt lobes. *Corolla:* tubular, funnel-form, with four spreading lobes. *Stamens:* four, on the throat of the corolla. *Pistil:* one, with exserted style and button-like stigma. *Leaves:* opposite, or whorled in threes; petioled; oval, or ovate; entire; mostly smooth. A shrub three to twelve feet high with rough, grey bark.

Perhaps in midsummer we attempt to cross a meadow, dry about the out-

side but near the centre of which the ground is broken up into a marsh. We are dismayed at the thought of crossing it, and perhaps would turn backward were it not for the flowers which urge us into its very midst. From the further side we see flaunting widely the petals of the rose-mallow; nearer at hand is the grinning face of the monkey-flower, and just beyond the button-bush. More sweet than that of the others is its luscious fragrance, and quaint enough the little florets look closely packed in balls. Their long styles and capitate stigmas remind us of pins stuck in a cushion. We are not repaid for picking these heads of bloom, as very shortly they fade; better indeed it were to leave them in the marsh.

PARTRIDGE VINE. CHECKER-BERRY. SQUAW-VINE.

Mitchella repens.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Madder.	White or flesh colour.	Fragrant.	General.	April-July.

Flowers : terminal, or axillary, two growing together and united by their ovaries. *Calyx-tube* : usually four-lobed. *Corolla* : funnel-form, four-lobed, they being recurved and bearded within. *Stamens* : four ; on the throat of the corolla. *Pistil* : one. *Fruit* : a round, scarlet berry formed by the cohering ovaries of the flowers and crowned by their persistent calyx teeth. *Leaves* : small ; opposite, petioled, orbicular, or ovate, blunt at the apex and rounded, or cordate at the base; dark green ; lustrous ; evergreen. *Stems* : trailing, rooting at the nodes.

Beneath the trees of the forest where day and night a silence reigns and all is far from human habitation, this little vine, unconcerned and at home, spreads great patches of its small, lustrous leaves. And full of sentiment appear the sister blossoms united curiously at their bases and combining to form the bright, pulpy fruit so much sought as an invigorating meal by ground-animals and birds. Like many of the madders, these complex little flowers are dimorphous, a fact clearly shown to us by the long exerted style and short filaments in some among them, and by just the reverse sizes of these parts in others. Well into the winter the berries last which with the evergreen, symmetrical little leaves are cheerful things to look upon as the woods gradually become bare.

GEORGIA BARK. CALICO BUSH. (Plate CLVIII.)

Pinckneya pubens.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Madder.	Pink and purplish.	Scentless.	Florida to South Carolina.	May, June.

Flowers : growing in lateral and terminal compound cymes. *Calyx* : pubescent ; oblong-obovate with five pointed, deeply cleft lobes, one of which in the outer flowers frequently becomes a large, coloured leaf. *Corolla* : pubescent ; tubular with five linear, recurved lobes. *Stamens* : five, exerted. *Pistil* : one ; style, exerted. *Capsule* : globose, dark-coloured, spotted with white dots and eventually splitting in sections to the base. *Leaves* : simple ; opposite, with pubescent



PLATE CLVIII. GEORGIA BARK. *Pinckneya pubens*.
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petioles ; ovate, or oval ; pointed at the apex and tapering into margined petioles at the base ; entire, one-sided at maturity, glabrous above, pubescent underneath, especially along the veins. A shrub, or small tree.

Along marshy banks of streams, or through pine-barren districts of the far south, the natives seek this shrub, or small tree, that they may peel its bark to use as a substitute for quinine. The most interesting feature perhaps of its attractive blossoms is the way one or rarely two of the calyx lobes of certain of the cyme's flowers becomes a large, pink floral leaf, casting a gleam of colour brighter even than the purplish-spotted corolla.



THE HONEYSUCKLE FAMILY.

Caprifoliaceæ.

Trees, shrubs, vines or herbs with simple, or pinnate, opposite leaves mostly without stipules, and which bear regular, or irregular, perfect flowers with gamopetalous corollas and mostly growing in cymes. Stamens on the corolla and alternating with its lobes.

HOBBLE-BUSH. TANGLE-LEGS. AMERICAN WAY-FARING TREE.

Viburnum alnifolium.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Honeysuckle.	White.	Scentless.	North Carolina and Tennessee northward and westward.	May, June.

Fertile flowers : tiny ; growing in dense, terminal, sessile cymes and being surrounded by radiate, neutral flowers. *Pedicels* : thickly covered with a pinkish scurf. *Calyx* : five-toothed. *Corolla* : with five small, rounded lobes. *Stamens* : five, on the throat of the corolla. Neutral flowers with usually five rounded lobes. *Drupes* : bright red, turning later to purple, or black ; not edible. *Leaves* : simple ; with thick, densely pubescent petioles ; orbicular or broadly ovate, abruptly pointed at the apex and cordate at the base ; pinnately veined ; doubly serrate ; dark green above, and covered thickly along the under veins with a thick scurfy pubescence. A much-branched shrub. *Twigs* : scurfy.

Along the slopes of the high mountains in North Carolina, often where deep shadows fall, this viburnum is most conspicuous among the shrubbery. Its branches sprawl often, or lie over on the ground forming great loops which root readily from their ends. By this means it trips up many that seek to pass through its meshes, and the natives have therefore deemed "Devil's shoestrings" a not inappropriate designation. It is one, however, which they seem to hold in readiness to bestow on the slightest provocation to several plants.

Not all the Viburnums have the showy neutral flowers which remind us somewhat of those of some hydrangeas. In fact, among the number

here mentioned, the hobble-bush is the only one that uses them as a means of attracting desired insects. The shrub is undoubtedly the handsomest of the genus as represented in our range, and grows through the Big Smokies to a height of quite fifteen feet. In the autumn its foliage turns to beautiful shades of wine-colour. It is, it would seem, to be regretted that it is so difficult of cultivation.

V. acerifolium, maple-leaved arrow-wood, dockmakie, while having no showy neutral flowers like those of the preceding species, makes quite a gay flutter of bloom with its many small, perfect flowers, growing as they do in long peduncled cymes. Its leaves also are graceful, being palmately veined, almost orbicular, and lobed in a way resembling maple leaves. The drupes are nearly black. From North Carolina it grows northward and westward and usually is found in open, rocky woods.

V. dentatum, arrow-wood, altogether one of the most pleasing of the genus, has pinnately-veined leaves, broadly-oval or ovate, which all around are coarsely-dentate. Its abundant cymes of perfect flowers terminate long peduncles, and the drupes they later develop are blue, or nearly black. As it occurs southward the shrub keeps well in the mountains' shade.

V. prunifolium, black haw, or stag-bush, rather a constant and pretty bloomer from April until June, is found in dry soil and through a range extending from Florida and Texas to Connecticut. It is a small tree sometimes, and may be recognised by its finely serrulate, ovate or broadly oval leaves, which are smooth and taper into petioles very slightly winged. The bluish-black drupes are covered with a bloom, and are agreeably sweet and good to eat. In the autumn the foliage turns to orange and purple.

V. rufotomentosum, southern black haw, opens in early April its pretty flowers which grow in compound cymes, and, noticeable on their short, grooved pedicels, is a reddish scurf. Very slight this is in comparison, however, with the dense, deep, red velvety tomentum which covers the leaf, stalks, and buds and extends along the veins on the under sides of the leaves. Besides the elliptical or obovate leaves there are many also which in outline are obcordate. All are finely serrate, thick and glossy. Usually we find this species of *Viburnum* growing as a small tree to about twenty feet high.

V. obovatum, small viburnum, occurs in swamps or along river-banks from Florida to Virginia and is a shrub of from two to eight feet high. Even in March it sends forth its abundantly flowered, sessile cymes growing from lateral and terminal leafy shoots. The leaves, like the flowers, are small, and are moreover obovate, or oblanceolate, and at maturity quite smooth. The drupes are oval and black.

YELLOW HONEYSUCKLE.

Lonicera flava.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Honeysuckle.	Deep yellow.	Fragrant.	Alabama to North Carolina and Kentucky.	April-June. Fruit: September.

Flowers: growing in a short, crowded, terminal spike. *Calyx*: minutely five-toothed, contracted at the throat. *Corolla*: slender; tubular, deeply two-lipped, the tube not swollen at the base, the limb four-cleft, within pubescent. *Stamens*: long exserted. *Berries*: bright orange-red. *Leaves*: opposite; those near the flower united at their bases about the stem; the lower ones sessile, or with short petioles; broadly oval, or elliptical; entire; bright bluish green above; glaucous below. *Stem*: slightly twining to occasional heights of five or six feet, or trailing; woody, glabrous.

In a more than usually beautiful genus, the yellow honeysuckle is one of the most lovely and fragrant of all. It grows through the upper districts mainly on mountain slopes, and its many flowers have the look of being subtended by the upper leaves, stiff and united about the stems. That their corolla's limb is so deeply divided gives also these blossoms an open look, full of grace and beauty.

L. didica, small yellow honeysuckle, grows through the mountains of North Carolina either in a twining way or as a shrub. Its yellowish green corolla is strongly tinged with purple, and although the flowers are produced numerously in their clusters they are not nearly so attractive as those of *Lonicera flava*. Especially on the young shoots the leaves display their tendency to unite about the stem.

L. sempervirens, trumpet, or coral, honeysuckle, woodbine, shows its gay spirit and energy in its exquisite scarlet, or yellow, flowers which hang gracefully from near the ends of the stalk. Their large tube is narrow and the limb almost regularly lobed. The upper leaves unite about the stem and are very thick and evergreen through its southern range. The plant is charming also when crowned with its round, scarlet berries.

L. japonica, Japanese, or Chinese honeysuckle, might be a lesson to many a native vine of sluggish habit, for most readily it makes its way, covering acres in places and devouring much that would hinder its progress. It has been naturalised from eastern Asia but also has abundantly escaped in such regions as were suited with the soil and climate. All know its white and yellow flowers growing in pairs on short peduncles, and which exhale a fragrance more sweet, it seems to me, than that of any other flower—a fragrance for the open air when life is gaily astir in early June.

HONEYSUCKLE. (Plate CLIX.)

Diervilla sessilifolia.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Honeysuckle.	Greenish yellow.	Scentless.	Mountains of Alabama to North Carolina.	July-September.

Flowers : growing in upright, axillary or terminal cymose clusters which terminate leafy shoots. *Calyx* : elongated, with five awl-shaped teeth. *Corolla* : funnel-form with five spreading, unequal lobes, the lower one being slightly bearded and often touched with red. *Stamens* : five on the tube of the corolla, exerted. *Pistil* : one; stigma rounded; large. *Capsules* : oblong; two-valved, with many seeds. *Leaves* : opposite; large, sessile or occasionally clasping at their bases; ovate-lanceolate, taper-pointed at the apex; serrate; thin; glabrous; bright green above; lighter below. *Stem* : branching; deep red; erect.

Perhaps one of the greatest, although subtle, charms of this erect, bush-like honeysuckle is the brilliant spots of red which fleck its leaves while they are still green and even touch here and there the pale yellow flowers. Again in the late season these leaves turn to ruddy, rich shades of bronze and red, and are then most attractive. For these, as well as its other good qualities, it is now much desired as a border plant in cultivation.

It was Buckley who named the plant, and, in fact, discovered it on the high mountains of North Carolina; but little is known in connection with the circumstances, for it was one of his peculiarities that he made few notes. Often even his labels were written without dates and localities. We therefore must look mostly to the plant to tell its own story.

D. Diervilla, bush honeysuckle, occurs also through the mountains of North Carolina and northward and is a shrub of from two to four feet high. Its leaves have distinct although short petioles and are mostly oval. The fragrant flower, its yellow corolla tinged with red, affords with its glands full of nectar a satisfying meal to even the hungriest bees.



THE BELLFLOWER FAMILY.

Campanulaceæ.

In our species herbs with acrid or milky sap, alternate leaves, without stipules, and which bear perfect flowers in various forms of inflorescences, their corollas being gamopetalous and the tube of the calyx adnate to the ovary.



PLATE CLIX. HONEYSUCKLE. *Diervilla sessilifolia*,
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PANICLED BELLFLOWER.

Campanula divaricata.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Bellflower.	Blue.	Scentless.	Georgia to Virginia.	June-September.

Flowers: tiny; nodding from thread-like pedicels in spreading and compound panicles. *Calyx*: with five linear teeth. *Corolla*: campanulate, five-lobed. *Stamens*: five; included. *Pistil*: one; the style protruding; stigma, three-lobed. *Leaves*: the upper sessile; linear to lanceolate sharply serrate; bright green; glabrous; the lower petioled, usually broader. *Stems*: one to three feet high; erect; wiry; smooth; paniculately branched.

In travelling through the high mountains of this bellflower's range, it seemed as though wherever there was an opening in the woods or a road had been cut through, the plant had found its way to the stronger light and sunshine. Over the very edges of high, rocky banks it leaned, and it was relatively as well anchored to the soil by its delicate fibres as was an oak by its great, uncovered roots. Constantly we saw fine, fleecy sprays of its tiny flowers. A bumble-bee lit on one that I noticed, and the whole plant bended with his weight.

C. Americana, tall wild bellflower, a bold and enchanting beauty of dignified aspect, something like a larkspur, is found through moist thickets and woods and sometimes looms tall and high on the roadside's bank. By its wheel-shaped, sky-blue or white corollas and long, upward-curved style, it is known, and often densely, as well as loosely, the flowers grow in leafy spikes from one to two feet long. The leaves mostly are lanceolate and serrate.

Legousia perfoliata, Venus' looking-glass or clasping bellflower, has an individual way of bearing its cleistogamous blossoms. Usually two or three of these peculiar flowers lie in the bottom of the cordate leaves that tightly clasp the stem, and such blossoms appear like little buds. Although these never open they are abundantly fertile. Only those that reach the top of the stem unfold and display their wheel-shaped violet, or blue, corollas. The very leafy and hairy stem is mostly simple, but again is branched and sometimes even prostrate. Over an extended range it seeks to grow in dry woods and fields.

SOUTHERN LOBELIA.

Lobelia amœna.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Bellflower.	Blue or white.	Scentless.	Florida to North Carolina.	July-October.

Flowers: growing profusely in a close, one-sided raceme with many small bracts. *Calyx*: with five linear lobes, the sinuses without appendages. *Corolla-tube*:

straight; divided to the base on one side. Two-lipped, the lobes at each side of the opening erect, recurved, the lower three ovate. *Stamens*: five, their filaments united into a tube. *Pistil*: one; stigma, two-lobed and having about it a ring of hairs. *Leaves*: oblong, or oblong-lanceolate, the lower ones petioled, the upper ones nearly sessile; dentate; thin. *Stem*: erect; two to four feet high, nearly smooth.

One day a young boy who had found in a swamp this beautiful lobelia told me with the mysterious air of great discovery that it was "just like a red flower" he knew, "only blue." Evidently he meant the cardinal lobelia, and his eye had been caught by the slit in the corolla and by other similarities of construction. The genus is certainly one readily recognised and very lovely in the summer and early autumn. Sometimes through the same swamp a number of them will be found not far distant from each other—the southern lobelia with its corolla intensely blue, a chaste and beautiful flower; the little, pale, spiked one of azure colour; the great, flaming cardinal one; and, taller than all, the great lobelia. It is then most interesting to regard them separately.

L. syphilitica, great lobelia or blue cardinal-flower, lingers in bloom until late in October and sometimes attains in the south astonishing height and proportions. Twice I measured stalks of it over four feet tall. They grew by a brook's side in the high mountains of western North Carolina, were abundantly leafy and would have been coarse-looking had they not been redeemed by the very numerous pale-blue, though bright, flowers. The stout stem is pubescent, and the calyx hairy, while its sinuses show large deflexed appendages.

L. pubérula, downy lobelia, a species of sandy, moist soil, is all over finely puberulent and often slightly sticky to the touch. It is smaller and much more slender and delicate-looking than the great lobelia, and it bears its sprightly blue flowers in a spike-like leafy raceme. Its obovate or oblong leaves, moreover, are quite thick.

L. glandulosa, glandular lobelia (*Plate CLX*), which we found abundantly in bloom in early October through the sandy soil of Florida and Georgia, even outlining the way of trolley-cars over flat country, bears but few, rather delicate-looking flowers in its raceme-like spike, and the simple nearly naked stem is also but sparingly leafy. Those leaves that do occur are linear-lanceolate or linear and glandular-dentate about their margins. The plant is seldom seen further northward than southern Virginia.

L. cardinalis, cardinal-flower, red lobelia, is a wild flower about which the nation might feel a righteous pride, so intensely coloured and velvety in texture are its flowers, defying the artist's pigments to imitate them, and forming against their background of dark green and lustrous leaves a wild bit of colour almost without equal. Happily the plant is well known and its



PLATE CLX. GLANDULAR LOBELIA. *Lobelia glandulosa*.
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range very general. Old men, urchins and little maids all seek it by the brook's side. Some among them call the flowers "nosebleed," not, however, a pretty name. They are used to dye with, and that they give up pretty freely their colour can be seen by letting the corollas fall in water, which then soon turns to their own hue. Country belles, I have been told by one initiated, make from the flowers a fluid with which to touch up their cheeks.

L. padulosa, swamp lobelia, thrives in the waters of swamps and ponds, being an aquatic. Its stem is nearly destitute of leaves, and those immersed or near the base are flat, spatulate and glandular-dentate. The pale blue flowers are quite small.

L. spicata, pale spiked lobelia, a slender, usually small one of the genus, although occasionally growing as high as the great lobelia, is known by its very small, very pale blue flowers produced densely in long, raceme-like spikes through which are interspersed many linear, entire bracts. The broadly-oblong, or obovate, leaves near the base are commonly in tufts; those of the stem are narrower, pale green and sessile. The plant's range is rather general.

L. inflata, Indian tobacco, wild tobacco, asthma weed or gag-root, abundant over an extended territory through thickets and dry fields, is decidedly weedy-looking with its small, light-blue flowers quite overshadowed by numerous thin, oval, or obovate dentate leaves. The plant moreover branches as a panicle and is pubescent. Its stem and leaves are very acrid to the taste, poisonous, in fact, and have been used in domestic practice as an emetic. But, more than for any other purpose, have the Indians dried them for smoking as a substitute for tobacco, to which they are somewhat similar in their bitter taste.



THE CHICORY FAMILY.

Cichoriaceæ.

Through our range herbs possessed of milky, or acrid, juices, basal, or alternate, stem-leaves and perfect flowers all alike, which grow in involucrate heads.

Corolla : gamopetalous, tubular and having a strap-shaped toothed limb. *Fruit* : an achene generally bearing scales or bristles which represent the limb of the calyx, called the pappus.

Among common plants too well known, too often trodden on, to be more than recalled as being members of the Chicory family, there is the dandelion,



PLATE CLXI. GRANDFATHER MOUNTAIN.

The first view we had of Grandfather Mountain was from the road after we had left Linville. Then beside an adjoining peak we saw it reposing in deep shadow. Slowly a few clouds moved by, resting sometimes for an instant on the tip of the massive nose. Everywhere were rocks. Through the abundant, kindly growth that throve on its surface, the visage, while stern and undisturbed, seemed not unfriendly. From certain points it looked to be a double peaked mountain, the two far apart, rugged and rocky ; but from other positions they appeared to blend peaceably into the one grave, old face.

(CLXI.)

or blow-ball, *Taraxacum taraxacum*. Often through open fields in the south it attains a height almost unknown in the north. Its young rosettes of leaves in early spring make so good a salad that it seems strange they are not thus used among the country people. They prefer, however, to boil these leaves as a pot herb, or to make from them a tonic renowned for purifying the blood.

Sonchus oleraceus, hare's lettuce or sow thistle, might better be called folk salad, for as such it is gathered, as well as to boil as a vegetable. In fields and waste places it occurs, being one of the European weeds now here abundantly naturalised.

S. asper, usually a smaller sow-thistle with innumerable sharp spines about its leaves, has also become abundant as an introduced weed.

Tragopogon porrifolius, a handsome one of the chicories, is also the common salsify, oyster-plant, the root of which, with its flavour similar to that of an oyster, is much used as a vegetable. Through our range the plant, which is a native of Europe, mostly occurs as an escape.

Cichorium intybus, wild chicory, or blue sailors, although so old and well known an inhabitant of America, is also a European by birth. Hardly, however, has it a rival in its cheerful, sprightly aspect, and, for variety, it occurs in blue, pink and white. Until late in the season it lingers in bloom, long after the grass has faded and golden-rods have died down to the ground. At about the noon hour the flowers close. Unfortunately its roots are used largely to adulterate coffee, to which they give a distinct, and to many a disagreeable, flavour.

DWARF DANDELION.

Adopogon montanum.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Chicory.	Deep yellow.	Scentless.	Mountains of North Carolina.	May-August.

Flowers: solitary, growing at the end of peduncles, six and eight inches long. *Flowers*: ligulate; numerous; mostly five-toothed at the apex and enclosed in an involucre of from six to fifteen lanceolate, pointed bracts. *Basal leaves*: long, pinnatifid. *Stem leaves*: linear-spatulate, rounded or bluntly pointed at the apex; thin; glabrous. *Stems*: two to five inches high. *Rootstock*: short.

Like little golden dandelions appears the young bloom of this rare *Adopogon*, which grows through the high mountains of North Carolina. Here it thrusts its heads from the crevices of rocks or sits very jauntily out on their warm surfaces, where it basks freely in the sunshine. Occurring in tufts the pale blue-green tint of the tender leafage blends with the deep yellow bloom and produces an æsthetic effect altogether charming.

The *Adopogons* are nearly all smooth herbs and have, as a mark of their genus, rounded scales to the pappus which occurs either with or without inner bristles.

A. Virgnicum, Cynthia, or Virginia goat'sbeard (*Plate CLXII*), also a perennial, an unusually handsome member of the genus, being large, produces on its branched stem a number of heads of deep, reddish orange flowers, which open when the day is warmest and close at night. But one or two leaves occur on the stem, where they clasp it at the base of the flowering peduncle. In oak-barrens and moist mountainous woods the plant stretches upward sometimes as high as two feet.

A. dandelion, dwarf dandelion, or goat'sbeard, which through our range occurs from Florida to Maryland, produces a solitary flower-head about an inch in breadth at the end of a long, naked scape. The leaves tufted about its base are spatulate, or linear-lanceolate, dentate, smooth and often glaucous. As they mature many of them become delicately tinted with purple. An interesting point about the plant is that from the ends of its thread-like stolons it develops small and rounded tubers.

A. Carolinianum, Carolina dwarf dandelion, has a range extending from Texas and Florida to Maine and is the tiny, graceful individual so frequently seen in sandy soil. Probably more often than not it is mistaken for the ordinary small dandelion. From its tuft of basal leaves arise slender, glabrous or pubescent scapes which bear the flower-heads. As the seeds fall it is noticeable that the thin lanceolate bracts of the involucre become strongly reflexed.

There is in this genus but one other species, namely *Adopogon occidentale*, an inhabitant of the western prairies.

FLORIDA LETTUCE. FALSE LETTUCE.

Lactuca Floridana.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Chicory.</i>	<i>Blue.</i>	<i>Scentless.</i>	<i>Florida and Louisiana to New York.</i>	<i>July-September.</i>

Flower-heads: growing on slender scaly peduncles in a large, spreading racemose panicle. *Involucre*: cylindrical, imbricated, the outer row of bracts being irregular and considerably shorter than the others. *Rays*: squared, and five-toothed at their summits. *Style-branches*: slender. *Pappus*: white. *Leaves*: alternate; lyrate-pinnatifid, toothed, the terminal lobe being large, taper-pointed and three-angled, very variable; the upper leaves lanceolate and sessile, thin, smooth above and pubescent along the ribs underneath. *Stem*: three to seven feet high branched above as a panicle; leafy; smooth.

Perhaps this is not a very attractive plant, but surely it is one which through open, moist places frequently excites our interest enough to make us wonder what it is, and where in the great world of flowers it takes its place. The genus to which it belongs has a milky juice, a fact to which the Latin name is an allusion. Included in it are many species, but mostly their flower-heads are small and the leaves rather coarse-looking.



PLATE CLXII. CYNTHIA. *Adopogon Virginicum*.
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L. villbosa, hairy-veined blue lettuce, bears also small heads of blue flowers, which grow in a narrow panicle inflorescence. The numerous stem-leaves are ovate, or oblong, and abruptly narrowed at the base where the blade is contracted into the wings of the petiole. On their undersides they have many short, stiff hairs.

L. Canddensis, tall wild lettuce or wild opium, is a common thing along roadsides, and in many places it grows sometimes ten feet high, its great basal leaves becoming a foot long. Its ray flowers are yellow, and throughout the plant is smooth. The white pappus, however, is particularly lustrous and silky. Humming birds gather it as a lining for their nests.

LYGODESMIA.

Lygodesmia aphylla.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Chicory.	Rose-colour.	Scentless.	Florida and Georgia.	April-September.

Flower-heads: solitary; five to ten flowered, showy. *Involucre*: cylindrical, the five to eight scales linear, thin; and the exterior ones being very short. *Rays*: quite large, minutely toothed at their apices. *Pappus*: of smooth white hairs. *Leaves*: long; filiform; stiff; smooth; the upper ones becoming bract-like and remote. *Stem*: one to two feet high, smooth; simple, showing forked branches.

Of the genus *Lygodesmia*, this slender, smooth plant is in the south the representative. It may be found through grassy pine-lands and sandy barrens and only becomes conspicuous when its extremely pretty flowers are in blow. At other times its stiff foliage is too grass-like and meagre to attract the attention.

LEAFY-STEMMED FALSE DANDELION.

Sitllias Carolinidna.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Chicory.	Yellow.	Scentless.	Texas and Florida to Delaware.	April-July.

Flower-heads: large; solitary at the ends of long bracted peduncles. *Involucre*: double; pubescent; oblong, the inner and principal bracts regular, partly united; the outer ones irregular, and often spreading; in fruit becoming reflexed. *Rays*: squared and five-toothed at their apices. *Styles*: with short branches. *Pappus*: of reddish brown hairs. *Leaves*: those from the base, oblong-lanceolate, tapering into a margined petiole mostly coarsely and deeply dentate or pinnatifid; those of the stem lanceolate, mostly sessile; dentate or entire; smooth. *Stems*: two to five feet high, branched, leafy; smooth or slightly pubescent below.

No true dandelion, I am sure, although not an especially modest flower, would ever presume to raise its head as high as do these large false ones of bright yellow. The leafy stems also mark the plant distinctly. The genus to which it belongs is not a large one, there being known in North America and Mexico but six species.

**RATTLESNAKE-WEED. SNAKE PLANTAIN.
HAWKWEED. (Plate CLXIII.)**

Hieracium venosum.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Chicory.	Orange-yellow.	Scentless.	Kentucky and Georgia to Ontario.	May-October.

Flower-heads: small; numerous; growing on slender peduncles in lateral and terminal, spreading, corymbose panicles. *Involucre*: campanulate, its outer row of bracts abruptly smaller, five-toothed. *Achenes*: oblong, or linear; not beaked. *Leaves*: those about the base tufted; obovate-oblong; mostly blunt at the apex and narrowed into margined petioles at the base; entire, or glandular, dentate, ciliate; smooth or slightly hirsute on the under sides of the usually purple-tinted veins. *Stem-leaves*: one to three, oblanceolate; sessile. *Stem*: one to three feet high; slender; glabrous; or with a few hispid hairs below; purple-tinted.

Very often throughout the summer we encounter this plant, and especially familiar it looks when blooming in dry woods with *Lacinaria scariosa* not far distant. It belongs to a genus of many members which bear a rather strong resemblance to each other, but the peculiar veining with purple of this one's large basal leaves is a most pronounced mark of its individuality. The country people group it with those plants of supposed virtue in curing the bites of rattlesnakes, and they apply the flat leaf quickly to such wounds. It seems that this superstition appeals mostly to their credence whenever some colouring of a plant is suggestive of the reptile's skin.

H. Mariànum, Maryland hawkweed, chooses its home in pine-barrens and dry woods of mountainous districts, where numerous are seen its small flower-heads growing on slender, somewhat hoary, peduncles. The stem above is paniculately branched, and, although it bears from two to seven leaves, the principal ones are those of the base. They are ascending and quite hairy underneath, especially when young. As of the preceding species, the pappus is brown.

H. paniculatum, paniced hawkweed, shows the trait of having large-lanceolate stem-leaves which taper to a point at their bases and bears its numerous small flower-heads on thread-like peduncles in a long and divaricately branched corymbose panicle. Throughout the plant is nearly smooth.

H. scabrum, rough hawkweed, indeed rough and weedy-looking, has an intensely hairy stem on which are borne large leaves, the upper ones being oval, or ovate, and sessile; and the lower ones oblong-obovate and tapering into margined petioles. Its numerous large flower-heads are produced in a racemose panicle and become very conspicuous in fruit when the pappus is yellowish brown.



PLATE CLXIII. RATTLESNAKE-WEED. *Hieracium venosum*
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H. Gronovii, hairy hawkweed, as its English name implies is covered about the lower stem with whitish hairs which also are scattered over the leaves. Often the upper part of its stem is quite leafless.

GALL-OF-THE-EARTH. LION'S-FOOT.

Nabalus serpentarius.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Chicory.	Cream-colour, or yellowish.	Scentless.	Florida and Alabama northward.	July-October.

Flowers: drooping from the ends of pubescent peduncles and growing in axillary and terminal panicles. *Involucre*: cylindrical; green or tinted with purple, and covered with white hairs. *Rays*: squared at the summit and toothed. *Styles*: long-branched. *Leaves*: alternate, oblong, very variable; pinnately and irregularly three- to seven-lobed or pinnatifid and tapering at the base into margined petioles; sparingly pubescent or nearly smooth on both surfaces. *Stem*: one to four feet high; smooth, or occasionally slightly pubescent.

Tall, weedy-looking plants are these, and, although we notice their bell-shaped and drooping flower-heads, they are quite without the charm of colour. It is well to know them, however, for often quite unsought they confront us, especially in the late season when little else is in bloom. The original Indian name from which the generic appellation was taken meant rattlesnake-root, as these plants are among those credited with a mastery over the serpent referred to. Our present species, in fact, not infrequently passes under the name of snake gentian. All of the species herein included, with the exception of *Nabalus virgatus*, are to be found in the moist soil and thickets of high mountains.

N. virgatus, slender rattlesnake-root, shows, on the contrary, flowers of a charming deep pink or of white, their involucre bracts being purplish. The clustered heads grow in a very narrow and wand-like thyrsus, while the leaves are sinuate, pinnately parted, or lanceolate and entire. It is one exclusively of the coast region, occurring from Florida to New Jersey. Along the St. John's River where stories of snakes are now more abundant than alligators, I was told of many magical cures of snakes' bites brought about through the efficacy of this plant.

N. albus, wild lettuce, or gall-of-the-earth, has also the principal bracts of its involucre of pale purple, while the strap-shape limb of its flowers is greenish or cream-colour and the pappus of cinnamon-brown. The leaves are angularly from three- to five-lobed varying, however, greatly in outline, as the upper ones are usually entire. Purplish and glaucous often appears the stem which grows at most five feet high. The plant is also one strongly believed to be a rattlesnake-master.

N. altissimus, tall white lettuce, with its slender green involucre bracts and straw-coloured pappus, appears, in fruit especially, very different from its

preceding relative. Its leaves then are thin and a bright yellow-green, and also vary greatly in outline, many being palmately-lobed and cordate and others occurring entire and tapering into a margined petiole. The flower-heads are but five to seven flowered.



THE THISTLE FAMILY.

Compositæ.

Generally herbs, more rarely shrubs or tropical trees, with perfect flowers growing closely in a head on the receptacle and surrounded by an involucre of bracts arranged by one or many series.

Corollas: either tubular, all alike, usually five-lobed or cleft; or having the margined flowers with an expanded limb, or ray. *Leaves:* opposite, alternate, or from the base, and stems mostly containing a watery, or resinous, juice.

Many indeed of our common herbs of pasture, our wayside friends, are members of this great tribe and clamour for an entrance through these pages. We can but mention them, as mentally they arise before us.

White, or ox-eye daisy, *Chrysanthemum Leucanthemum*, honoured with a different name by almost every child that picks it in England, is now much too well naturalised in this country to overjoy the farmer who has to struggle with its aggressiveness throughout the season. Then there is Tansy *Tanacetum vulgare*, showing its small golden heads along the roadsides, where no doubt it has escaped from cultivation in the land of its adoption.

The May-weed or fetid camomile, *Anthemis Cotula*, with its propensity for straying along the very edges of roadways and again appearing through fields and waste places, is still another conspicuous weed that has become naturalised from Europe. It is thought to be the plant physician in country lore, with the ability to cure those that are sickly when simply placed beside them.

Also a member of the Thistle family is the great bur or burdock, *Arctium Lappa*, a coarse biennial or short-lived perennial, naturalised from Europe and now common in waste places. Its bristly bur-like involucre has no beauty; but little boys find them capital things to throw in their sisters' hair.

Milfoil, or yarrow, *Achillea Millefolium*, with its traditionary record of virtue and with dense corymbs of white or, more rarely, pink blossoms, is also from Europe. To make a good turf it has been found useful in the west,

but it makes one that must be cut down very often. In the far west there is now known to be one or more native species of *Achillea*.

BROAD-LEAVED IRON-WEED.

Vernonia glauca.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Thistle.	Magenta.	Scentless.	Louisiana and Florida to Pennsylvania.	August-September.

Flower-heads : growing on slender peduncles in loose cymose panicles. *Involucres* : campanulate, with pointed, ovate bracts. *Flowers* : all alike, tubular, their corollas five-cleft. *Pappus* : straw-colour, of both bristles and scales. *Leaves* : alternate, obovate or broadly oval, sessile, or the lower ones with short margined petioles ; sharply and coarsely serrate, paler beneath than above ; thin, smooth, or finely pubescent along the underveins. *Stem* : two to five feet high ; erect ; branched ; smooth.

When white carrots whiten the fields, and daisies cloud the landscape, and boneset and yarrows and golden asters are everywhere ; then one may know that the day of the great order *Compositæ* has come and that triumphantly they will wave until bitten down by the early frosts of winter. In the autumn they spread their warm brilliant colours, harmonising well with the changes that are taking place in the tree-tops, and boldly, lavishly—for there is nothing mean about them—they cover the often bare spots of the earth. Among them all none is more vividly coloured than are the iron-weeds with their heads of magenta flowers shaped somewhat like miniature thistles. So high they grow sometimes that a man cannot reach their summits. The broad-leaved one stays mostly in the woods, while others grow best in moist, low grounds, or follow roadside banks.

V. gigantea, tall iron-weed, attains not infrequently the great height of ten feet, a truly wild flower. During August and September, in different parts of North Carolina I saw it towering over many things, or being just on a level with the tallest Joe Pye weeds. Its flower-heads are small, but produced most abundantly, and show in fruiting time a magenta or magenta-brown pappus. The leaves are lanceolate, finely serrate, also deep green on both sides.

V. noveboracensis, flat top, or iron-weed, grows sometimes nearly as tall as *Vernonia gigantea* and is the more commonly known species of the mountain region. Early in July it begins to show the brilliant magenta colouring of its tubular flowers. The bracts of the involucre are dull purplish and are tipped with slender points suggestive of a fringe. Through moist soil and along the banks of rivers, it is of all the composites one of the most conspicuous.

BLUE STOKESIA. (Plate CLXIV.)

Stokesia lœvis.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Thistle.	Blue or purplish blue.	Scentless.	Louisiana, Georgia and South Carolina.	June, July.

Flower-heads: large, terminal, the central flowers all tubular, the marginal ones radiant; the rays cleft at the summit. *Involucre*: bracted, rounded, the outer scales with leaf-like bristly appendages; the inner ones smaller, lanceolate. *Leaves*: alternate; lanceolate; those from the base tapering into long, smooth petioles, those on the stem sessile, the upper ones bristly at their bases; entire. *Stem*: one to one and one-half feet high, erect, slightly pubescent.

Less coarse-looking and almost more beautiful than any other one of the composites is the very rare blue Stokesia, which only in certain known localities through wet pine-barrens can readily be found. It stands rather alone, a unique individual in the great order, for botanically it has no near relatives. Its great toppling heads of flowers, frequently purely blue, remind us more of some cultivated asters than wildings of remote places. An interesting point in connection with the plant is the apparent gradation of its stem-leaves into bracts as they approach the flowers. In looking at it one is confirmed in the belief of the morphology of the foliage into the flower. In honour of Sir Jonathan Stokes, an English botanist, the plant has been named.

THOROUGHWORT.

Eupatorium incarnatum.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Thistle.	Deep lavender.	Scentless.	Texas and Florida to North Carolina.	September-October.

Flower-heads: growing in numerous loose cymes at the ends of long axillary shoots. *Involucre*: campanulate, short, with many lanceolate, or linear, pointed bracts. *Flowers*: all tubular, regular, and but little longer than the bracts. *Corolla*: five-toothed. *Style-branches*: exserted. *Leaves*: opposite with long slender petioles broadly ovate, taper-pointed at the apex and squared, or cordate, at the base, the margins outlined with blunt-pointed teeth; thin; somewhat coarse. *Stem*: erect or reclining; much branched, two to four feet high, leafy, more or less pubescent.

Of this large and buoyant genus of plants this one is a rather slender thing and not at all well known. Its leaves are perhaps its chief feature of beauty, for the flower-heads although very numerous are also very small. It hides in the woods, where in rocky, rich soil it thrives best.

Happily we all know Joe Pye weed and Boneset, two conspicuous Eupatoriums; and through the likeness of others to them we are often able to connect such individuals with the genus.

E. purpureum, trumpet-weed, or as more familiarly called "Joe Pye," grows to be one of the tallest and most conspicuous of the thistle family.



PLATE CLXIV. BLUE STOKESIA. *Stokesia laevis*.
(497)

Early in August it begins to unfold great masses of pinkish crimson flowers and raises them on a stem which, when well located in some warm, moist place, grows perhaps ten feet high, the principal leaves on the stem being in whorles of usually six, giving it a pronounced symmetrical look. They are long ovate, or ovate-lanceolate, thin and nearly smooth. Near the top of the stem, however, they often occur opposite to each other. The name Joe Pye, long associated with this plant, is in commemoration of an Indian doctor who travelled through New England and was reputed to cure typhus fever through its use.

E. capillifolium, hog-weed, or dog-fennel, bears but little casual resemblance to the foregoing species. On its stem the leaves are crowded in alternate positions and are pinnately divided into thread-like segments. Combined with this fine foliage the charm of the plant lies in the soft, fluffy look of its many small flower-heads of greenish white. It is found usually in dry fields.

E. album, white thoroughwort, another notable member of the genus, grows but from one to three feet high, producing opposite, oblong-lanceolate, sessile and coarsely toothed leaves, and flower-heads of white in spreading and terminal clusters.

E. coelestinum, quaintly called the "mist-flower," from the soft haze of its violet-blue blossoms growing with bell-shaped involucre in small compact heads, is further known by its opposite, slender-petioled leaves being ovate with a truncate base.

E. perfoliatum, boneset, common thoroughwort, or Indian sage as this plain, well known plant along the waysides is variously called, is always recognisable by its opposite, lanceolate leaves, long pointed at the apex and which about the stem are connate-perfoliate. It is a sturdy, stout individual, much branched, and the young growth is woolly, pubescent. In the small heads are compactly produced many greenish white flowers often fluffy-looking from their protruding stamens. From time almost immemorial, boneset has been utilised to make into a strengthening tea. It is something that the "yarb doctor" never forgets. As about borage and vervain, an old superstition exists that it will not thrive far away from human habitations.

CLIMBING HEMP-WEED. (Plate CLXVI.)

Willughbeia scandens.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Thistle.	White, or pink.	Scentless.	Texas and Florida to Ontario and westward.	July-September.

Flower-heads: growing in lateral and terminal compound clusters and being composed of tubular flowers only. *Involucre*: with four linear, pointed bracts.



PLATE CLXVI. CLIMBING HEMPWEED. *Willughbæa scandens*.
(499)

Corolla: regular campanulate; five-cleft. *Style-branches*: very long. *Leaves*: simple; opposite, with slender, smooth petioles; cordate or slightly hastate and tapering at the apex to a point; entire, or obtusely dentate. A smooth, twining vine.

Sometimes to the length of eighteen feet twines this herbaceous vine, as in swampy ground it vigorously makes its way among other forms of growth. The flowers especially in their pink form are pretty, and it is through their arrangement rather than by the plant's manner of growth that we at once connect it with the Compositæ. Another common name by which it is designated is "boneset," but generally we prefer to reserve this for the faithful old *Eupatorium perfoliatum*.

HANDSOME BLAZING STAR.

Lacinaria elegans.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Thistle.	Pinkish lavender.	Scentless.	Texas and Florida to Virginia.	August-October.

Flower-heads: growing prolifically in a long, cylindrical and leafy spike. *Involucre*: campanulate, the bracts usually in three series of which the inner ones are lanceolate and extend into petal-like, lavender tips, fluted about their margins. *Corolla*: regular; tubular; with five, pointed lobes and pubescent on the outside. *Pappus*: fine; plume-like. *Leaves*: simple; alternate; sessile; pointed, often bluntly so at the apex; entire; punctate; becoming small among the flowers. *Stems*: two to four feet high; erect; very leafy; densely pubescent and arising from a round tuber.



Lacinaria.

One day late in October in a low, sandy meadow near Savannah, Ga., we found a goodly company of blazing stars and golden-rods all growing in a state of luxury fairly astonishing. Never before had we seen any that approached them in splendour. The bold, high spikes of this particular plant were so densely flowered that the finger could hardly be thrust in among the blossoms. Many of them were of a soft, rosy lavender shade, far more effective than the white form, while others approached a deep purple. Some of the spikes also were nearly a foot and a-half long, an almost incredible statement to those that have only gathered them further northward. In the same meadow were other species of blazing stars, and, as they were interspersed among tall, plume-like grasses, I appreciated for the first time the full beauty of the genus.

In parts of the west, so I have been told, comets are



PLATE CLXV. RUIN NEAR CÆSAR'S HEAD.

After we had left the highway where the sun poured freely down we entered the more shaded road leading to Cæsar's Head, and stopped before an old ruin at the foot of the hills. Without the enclosure grew a high, ungainly locust tree, and shrubby, odd-looking sycamores leaned against the crumbling walls. But for them the spot would have seemed strangely deserted. Joe Pye-weed, tall and sentinel-like, was guardian of the scene.

(CLXV.)

called blazing stars, and it is because these plants shoot out somewhat like comet-tails that this English name has been given them. Through the South they are rather generally looked upon as rattlesnake-masters.

L. scariösa, large button-snakeroot, gay feather, or blue blazing star, another and unusually handsome one of this varied genus, produces its flowers in rounded, compact and slender-peduncled heads quite distant from each other on the stem. The obovate scales of involucre are rounded at the apex and margined with transparent purple, or white. Along the stems, showing much lanceolate, entire foliage, the inflorescence extends often eighteen inches. The plant itself is known to grow quite six feet tall.

L. squarrosa, scaly blazing star, or colic root, may be regarded as rather a small species, it seldom growing over two feet high. At its summit a few large heads of pinkish, crimson flowers are borne, extremely pretty and gay-looking. Of its involucre the lanceolate bracts are spreading, very stiff and pointed almost as sharply as spikes. The leaves are pale green, linear, often narrowly so and also rigid. It is this species, perhaps more than any other, which is sought as a rattlesnake-master. From the globular tubers a decoction is made, "powerful good" to cure snake-bites.

L. spicata, dense button-snakeroot, backache root, or also called Devil's-bite, is known by its small, cylindric and sessile heads of flowers which, however, grow very closely together on the stem, forming thus a long, dense spike. Quite grass-like are its leaves; the lower ones, linear-lanceolate, clasp the stem at the base and become sometimes a foot long. The plant is also one that grows very tall. When the rattlesnakes are less vicious than their wont, it seems that the decoction made from this plant is held in reserve to cure backache.

L. Chapmanii, which inhabits dry, sandy spots in Florida, is again a small species at most about two feet high, but usually not taller than twelve inches. Its cylindrical flower-heads are mostly three-flowered, borne close together, forming thus a dense spike, while the leaves of this species are linear, quite thick about the base of the stem, and gradually decrease in size until they become bract-like among the flowers.

HOUND'S OR DEER'S TONGUE. VANILLA PLANT.

Trilisa odoratissima.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Thistle.	Deep magenta.	Foliage fragrant.	Louisiana and Florida to Virginia.	September, October.

Flower-heads: seven or eight growing in elongated and spreading corymbose panicles. *Involucre*: of nearly equal, oblong scales, imbricate. *Corolla*: tubular, with five spreading lobes. *Style-branches*: greatly exserted. *Leaves*: alternate, the lower ones oblanceolate, or oblong, rounded at the apex and tapering at the

base into petioles; the upper ones ovate or oval, sessile, blunt at the apex, remotely toothed, three to five veined; fleshy; slightly glaucous. *Stems*: two to three feet high; smooth; dark reddish.

Because its foliage when withered exhales a scent something like that of vanilla beans, we often see this plant hung up in the cabins of negroes, and also in the palmetto-thatched cottages of many white people throughout the lower district. All seem to regard it with favour and also make it into bit-
ters to take when prostrated by fever. But it is in the flavouring of fine-cut tobacco that it finds its greatest usefulness. For this purpose the plant is gathered in enormous quantities. Although again and again assured of the likeness by the natives, it was rather a strain on my imagination to see that, more than many others, its thick leaves resembled the tongue of either a deer or a hound.

T. paniculata, hairy trilisa, differs principally from the hound's tongue, with which it is found growing through many a flat pine-barren, in having an intensely viscid and pubescent stem. Its lower entire leaves are lanceolate, or oblong-ovate, as are the upper smaller and sessile ones, while the flower-heads, which greatly resemble those of the companion species, form often a narrow and dense panicle. From their similarity to some species of blazing stars it would be quite excusable to confuse either of these plants with certain *Lacinarias*.

Carphephorus corymbosus. (Plate CLXVII.)

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Thistle.	Pinkish lavender.	Scentless.	Florida to North Carolina.	September, October.

Flower-heads: abundant, growing on pubescent peduncles in a terminal close corymb. *Involucre*: bell-shaped, the pale-green rounded bracts membranous and rounded on the edges. *Corolla*: tubular, with five short-ovate teeth. *Style-branches*: elongated. *Leaves*: alternate, those about the base tufted; oblanceolate, blunt, or rounded, at the apex; those on the stem oblong or oval, sessile, rounded at the apex and pointed upward; entire; fleshy; smooth. *Stem*: two to four feet high; erect; simple, very pubescent; leafy.

Little that grows through the swamps and sandy, wet barrens in the autumn is more beautiful than these large, fluffy clusters of softly coloured flowers, with their velvety, pale apple-green and up-pointed leaves. The exquisite rosette of leaves at the plant's base, however, makes no great show. It must usually be sought for, as it is well hidden by tall grasses. In the Floridan swamps we saw much of the plant; but through the low-lying, wet ground along the Talleyrand road which leads out from Jacksonville, it appeared in great abundance and was most lovely. On each of the bunches we gathered there was one to strike terror to the very soul; a great spider, of brassy yellow hue and with a round fat body.



PLATE CLXVII. *Carphophorus corymbosus*.
(503)

C. pseudo liätis, a less showy species than the one already mentioned, bears long linear leaves; the basal ones of which are crowded and the upper ones appressed against the stem. Its terminal corymb moreover is rather small and dense, and the whole plant is slightly hoary.

C. bellidifolius is known by its large heads of flowers which grow solitary at the ends of a leafy peduncle forming thus a loose corymb. Of the involucre the bracts are oblong, rounded and fringed at their apices, and moreover rather unequal in size. The flowers' brilliant crimson corollas have five pointed lobes. About the plant's base the leaves are lanceolate and clustered, while on the stem they are small, distant and sessile.

C. tomentosus, which resembles greatly a *Lacinaria*, occurs through the Carolinas to Florida in low pine-barrens. Its flower-heads are produced in loose cymes, and the leaves, which are lanceolate and tufted about the base, become very small and sessile on the stem. Very noticeably is the plant covered with tomentum.

GOLDEN ASTER.

Chrysopsis pñosa.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Thistle.	Golden.	Scentless.	Florida and Alabama to North Carolina and Virginia.	August-October.

Flower-heads: large, growing on leafy peduncles in a terminal spreading corymb and composed of both ray and disk flowers. *Involucre*: campanulate, the bracts narrow, imbricated in several series and spreading. *Rays*: oblong, pointed at both ends. *Pappus*: of both sorts of flowers alike and double. *Leaves*: alternate; oblong, blunt at the apex; the lower ones being often spatulate and narrowed into petioles; the upper one sessile; entire; veined, and very villous. *Stem*: one to two feet high, branched above, leafy and hoary with white hairs.

Among the golden asters this one of dry, sandy fields is not common, being found much less seldom than either of the other given species. It is quite a large, leafy plant and of coarser aspect than usually we associate with the genus. Still its heads are golden, and it is one of the first of the autumn flowering composites to come and one of the last to go.

C. Mariàna, Maryland golden aster with its large golden heads of blossoms, is always a cheery individual, and either in dry, open woods or sandy spots grows from about one to two feet high. It is happily one that occurs very often, and over a range extending from Florida and Louisiana to southern New York. At its base rests a large tuft of spatulate oblong leaves while those on the stem are mostly lanceolate and sessile. With the exception of silky white hairs which cling to them loosely and fall early, they are quite smooth.

C. graminifolia, silver grass, or grass-leaved golden aster, has for me the greatest charm of them all, as it grows perhaps side by side with the silky aster through sandy pine-barrens. Its tall and leafy stem is considerably marked, as is its grass-like foliage, with white, silky and lustrous hairs, giving the plant an intense and silvery sheen. The rather small but very attractive flower-heads grow on softly woolly and leafy peduncles, and thus form a spreading corymb.

Pterodcaulon pycnostachyum. (Plate CLXVIII.)

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Thistle.	White.	Scentless.	Florida to North Carolina.	June, July.

Flower-heads: growing in compact, oblong and woolly spikes, and composed only of tubular flowers. *Corolla*: five-cleft. *Involucre*: with lanceolate early-falling scales, imbricated in several rows. *Pappus*: longer than the involucre. *Leaves*: lanceolate, narrowed at the base into margins which extend considerably below the point of attachment on the stem; irregularly dentate; dark green, densely tomentose underneath; and somewhat woolly on the veins. *Stem*: one to two feet high, simple or rarely branched; leafy.

This very strange-looking plant is found, for one place, about St. Augustine, Fla., although as far northward as the Carolinas it sparingly occurs in the damp, sandy barren strip of country. The hoary, thick white undersides of its leaves are noticeable, and the way the leaves extend along the stem, making it appear as though winged, appeals to us as a rather unusual freak in its construction.

RAYLESS GOLDEN-ROD.

Chondrophóra nudata.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Thistle.	Yellow.	Scentless.	Florida to New Jersey.	August-October.

Flower-heads: very numerous, growing in compound corymbose cymes, and composed only of tubular flowers. *Corolla*: tubular; five-cleft. *Involucre*: campanulate; narrow, with appressed, yellowish green imbricated bracts. *Leaves*: alternate; the lower ones spatulate and obtuse, the upper ones linear, sessile, entire. *Stem*: erect; one to two and a-half feet high; simple; glabrous.

Although without the conventional rays of golden-rod, the many, tiny tubular flowers of this plant, packed snugly in their flat terminal clusters, form often great patches of yellow, making dull-looking barrens to gleam as if with sunshine. In fact it is only when thus seen in masses of colour that the plant is beautiful, for its leaves are too distant on the stem to produce much effect. Through the moist barrens it is especially charming when crowding in and about equally vigorous gerardias.



PLATE CLXVIII. *Pterocaulon pycnostachyum*.
(506)

GOLDEN-ROD. (*Plate CLXIX.*)*Solidago glomerata.*

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Thistle.</i>	<i>Deep yellow.</i>	<i>Scentless.</i>	<i>Mountains of North Carolina and Tennessee.</i>	<i>August-October.</i>

Flower-heads : growing on pubescent peduncles in axillary and terminal clusters and including both radiate and tubular flowers. *Involucre* : of several series of imbricated-oblong-obtuse green bracts. *Rays* : six to twelve, oval, rounded at the apex. *Disk-flowers* : numerous. *Leaves* : large ; alternate ; oblanceolate, or oblong-ovate, long pointed at the apex, tapering at the base ; serrate, or entire, the midrib prominent on the under side ; rather thick ; smooth. *Stem* : stout ; erect ; one to three feet high ; smooth or slightly pubescent above.

It was about this golden-rod, with its pretentious-looking leaves and great compact heads of flowers, that Dr. Gray wrote after a visit to Roan Mountain :

"Near the summit of the mountain we saw immense quantities of a low, but very large-leaved solidago, not yet in flower, which I take to be the *Solidago glomerata* of Michaux, who could not have failed to observe such a conspicuous and abundant plant, especially as it must have been in full blossom at the time he ascended this mountain. It does not, however, altogether accord with Michaux's description, nor does that author notice the size of the heads, which in our plant are among the largest of the genus."

On Grandfather Mountain in the last of October, I saw the plant blooming in great abundance. It could not, as Dr. Gray had said, "fail to be observed." It is so large, so brilliant in colouring. To the high summits of such mountains it confines itself, and in the late season it casts over them much beauty.

S. spithamea, golden-rod, another species of the high mountains of North Carolina and Tennessee, we collected on Grandfather Mountain, not far distant from *Solidago glomerata*. It grew usually from eight to twelve inches high, and its racemes of flower-heads in crowded corymbs appeared immensely heavy and dense. The ray flowers number from six to seven, and the erect, stiff stems are pubescent above. It is a species of Dr. M. A. Curtis, who collected specimens of it as well as of *Solidago glomerata*.

S. monticola, mountain golden-rod, which also follows the mountain's high ridges and grows over a district extending from Georgia and Alabama to Pennsylvania, is distinctive by its very thin, sharply-serrated leaves, broadly oblong and by its close heads of flowers, which grow in a terminal and spike-like thyrsus. In the moist soil of woods on Mt. Mitchell it is very abundant.



PLATE CLXIX. GOLDEN-ROD. *Solidago glomerata*.
(508)

BLUE-STEMMED, OR WOODLAND GOLDEN-ROD.

Solidago casia.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Thistle.</i>	<i>Yellow.</i>	<i>Scentless.</i>	<i>Texas and Florida to Maine.</i>	<i>August-October.</i>

Flower-heads: growing in short, rounded and axillary clusters or racemes. *Involucre*: with appressed, obtuse scales. *Rays*: three to five, quite large. *Leaves*: lanceolate, long pointed at the apex and tapering to a margined petiole at the base, or nearly sessile; distantly serrate, yellow-green above, pale below, smooth. *Stem*: two to three feet high; slender; branched above; leafy; smooth; bluish.

One of the most graceful of all the golden-rods is the blue-stemmed one of damp, shady woods. Its short clusters or racemes of flowers hug closely into the axils, nestling it would seem among the longer leaves. And in its often reddish purple, or blue-coloured stem we find, it may be remembered, a good guide for its identification.

S. bicolor, silver-rod, is, among this great genus remarkable for the strong family resemblance of its members, the only one that bears other than yellow flowers. They are silvery white and grow in short, axillary clusters, forming a narrow, compact thyrus. Its lanceolate, or obovate, leaves, long pointed at the apex, taper at the base into margined petioles, or higher on the stem are sessile. Underneath they are quite pubescent, while on the purplish stems these white hairs are also conspicuous. Early in the season the silver-rod first blooms and until the late autumn is a familiar figure, as it stands tall and straight, a guardian of the woods, or shines through the thickets of road-banks.

S. puberula, downy golden-rod, as well as occurring in sandy, rocky places on the high mountains, follows the coastal plain from Florida and Mississippi northward. Its inflorescence presents a close, long thyrus, the individual racemes of which are longer than the lanceolate leaves from the axils of which they are produced, and the bracts of the involucre are very acute. There is usually over the plant a minute pubescence.

SWEET-SCENTED GOLDEN-ROD. BLUE MOUNTAIN TEA.

Solidago odora.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Thistle.</i>	<i>Yellow.</i>	<i>Bruised leaves, anise scented.</i>	<i>Texas, Florida and Kentucky northward to Nova Scotia.</i>	<i>July-September.</i>

Flower-heads: growing in one-sided, spreading racemes in a terminal panicle. *Involucre*: with oblong, pointed bracts. *Rays*: showy, three to four. *Leaves*: lanceolate, long pointed at the apex, narrowed and sessile at the base, entire, thin, glabrous, punctate with pellucid dots, scented like anise. *Stem*: two to four feet; simple; slender; the upper part slightly pubescent.

Although about the flowers of this golden-rod there is nothing very

individual, we find in its leaves, emitting their strong anise scent, an unfailing mark of its identity. And it is not only when they are bruised that this odour becomes apparent; a bunch of the stems in a room will soon laden the air heavily. To many this is not at all agreeable. It is one of the earliest of the family to send up green stems in the late summer, and these are often objects of interest, for the inflorescence of the golden-rods unfolds in many different ways. Some wave fleecy, feathery tops; others are almost without shape or they may be as compact and stiff as rods. But no one could mistake a golden-rod; the question is simply, though often one difficult to answer, just what species has come up before us.

S. nemoralis, dyer's weed, or grey golden-rod, blooms abundantly through old, dry fields, and is one of the very common ones of the order. Its flower-heads, we notice, are grouped in a pyramidal, recurved and usually one-sided panicle appearing like a plume, and the rays are quite showy. Over the plant there is an ashy, greyish sheen cast by its minutely fine and rough pubescence. The lower leaves are oblanceolate, coarsely serrate and grow in a tuft about the base.

S. Canadensis, yellow weed, or Canada golden-rod, although bearing very small flower-heads, is an extremely showy plant, as it is compactly grouped in great numbers on the long and recurved branches of the panicle. Its leaves, which are lanceolate, triple-nerved and sharply serrate, are very rough especially on their upper surfaces, and are paler underneath. While occurring generally through the northeast and northwest territory, the plant also extends southward to Florida.

WESTERN DAISY.

Béllis integrifolia.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Thistle.	White, or pale-blue.	Scentless.	Texas to Kentucky and Tennessee.	May-July.

Flower-heads: terminal; solitary with both ray and disk flowers enclosed in an involucre of lanceolate, thin and pointed bracts. *Ray-flowers:* pistillate; imbricated in two rows. *Disk-flowers:* bright yellow, oblong-linear, numerous. *Leaves:* those from the base tufted, spatulate; those of the stem, sessile; oblanceolate or linear, blunt or pointed at the apex and covered with fine hairs; thin. An annual, much branched herb, six to fifteen inches high, with sparingly hairy or smooth stem.

As dainty and exquisite as some of the transient bloom of earliest spring is this fair daisy, which reminds us somewhat of its European relative generally seen in cultivation. Through its southern range it grows in moist soil and has oblong-linear rays, blue or purple and very pretty.

Aster Curtisii.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Thistle.	Violet-blue.	Scentless.	Mountains of North Carolina and Tennessee.	September.

Flower-heads: axillary, or growing in broad, loose corymbs and composed of both ray and disk flowers, enclosed in an involucre of green, linear and spreading bracts. *Rays*: almost linear, violet-blue, entire. *Disk-flowers*: pale magenta; numerous. *Leaves*: alternate; lanceolate; the lower ones tapering at the base into margined petioles; the upper ones and those of the inflorescence, sessile, serrate; bright green. *Stem*: two to three feet high; simple; erect; leafy; deep purple, or brownish; smooth.

It is not strange that the people of the mountainous districts call the asters, "frost-flowers," for when, with golden-rods, their white and purple flowers strew the floor of these sombre heights it is time indeed to prepare for the winter. Hardly then are moments taken to praise their beauty. Through the dry, open woods of the mountainous district of North Carolina and Tennessee—apparently the plant's range—*Aster Curtisii* is found, one of the most dainty and artistically coloured of all the genus. When its disk-flowers are young, they are light yellow or nearly white. Only as they grow old do they turn to magenta. Early in the season, sometimes, when the *Sabbatias* are blooming, there may also be found close and rather curious-looking heads of small, ovate and pointed leaves. These are the proliferous flowers of *Aster Curtisii*, or rather those leaves which have not been transformed into flowers.

From the summit of Mt. Mitchell a bouquet of such ones was brought to me combined with *Sabbatia angularis*. The effect was charming.

In the high mountains of western North Carolina our attention was frequently directed by the natives to what they termed the "evergreen aster," in the beauty of which they seemed to feel some just pride. The plant was, however, *Ionactis linariifolia*,—stiff, or savory-leaved aster, and it is quite true that nearly throughout the winter its leaves are persistent.

Aster grandiflorus, large-flowered aster, the great showy one of the south, thrives well from Florida to Virginia especially in the Piedmont region. Its stem is divaricately branched, and the flower-heads terminal at the ends of the sprays. Often they measure as much as two inches across. The ray-flowers, of deep violet, are most numerous. Linear, or linear lanceolate, are the stiff and entire hispid leaves and quite without any touch of silvery sheen.

A. Elliottii, which grows through the swamps from Florida to North Carolina, is another remarkably beautiful species, its ray-flowers being pale pinkish purple, long and slender; the rather small, loose bracts of the bell-shaped involucre being nearly equal in size, their tips slightly spreading.

The numerous leaves are oblong-lanceolate and pointed at the apex, and are narrowed at the base into margined petioles, or the upper ones are sessile and partly clasping. They are pale green, usually roughened on both sides and often, as is the smooth stem, tinted with purple. In fruit the plant still shows its colour, for the pappus is sometimes purplish.

A. dumosus, rice-button aster, bushy aster, belongs to quite another group of this large order, it having very small and numerous flower-heads which grow at the ends of slender and very leafy branchlets. Of the involucre the scales are membranaceous about their margins and closely imbricated in from three to six rows. The leaves spatulate-lanceolate, or linear, are narrowed at the base, sessile and entire or, rarely, sparingly serrate, while on their margins they are quite rough. Through either dry or moist soil this species is very common and subject to considerable variations, it not unfrequently occurring in a white form.

A. ericoides, white heath-aster, frost-weed aster or farewell summer, is indeed a dainty, late-blooming white one, often stopping to greet the month of December and also well known from Florida to Maine. Its very small flower-heads are produced singly at the ends of leafy branchlets, thus forming a spreading raceme, and its stem-leaves are narrowly linear and sessile, while those about the base are spatulate lanceolate and dentate. Often also the stem and branches are quite pubescent.



Aster patens.

A. concolor, lilac-flowered, silky, or silvery aster has an air quite distinctive from that of numerous other asters, and is unusually pretty. Besides the beauty of its large flower-heads, the rays of which are lilac and which grow on ascending, leafy and axillary peduncles in a long narrow raceme, or, occasionally, panicle, the leaves have a jaunty appearance. They are oval and sessile, and point upward on the stem. Over them there is on both sides a fine silvery pubescence. Also the reddish stem is usually pubescent with a white wool. Although sometimes found to be branched, the stem usually is simple, and so compactly arranged are

both leaves and flowers that the plant somewhat suggests one of the blazing stars. It blooms almost as early as the golden asters and often in their neighbourhood.

A. patens, late purple aster, or purple daisy, is known from its having

ovate-oblong leaves, which are deeply cordate and clasping at the base. They are, moreover, entire and extremely rough on the margins and upper and lower surfaces. The widely divergent stems bear at the ends of leafy branchlets large flower-heads, measuring often somewhat over an inch in diameter. The bracts of the top-shaped involucre are pubescent on their outer sides, and their pointed tips are quite spreading.

Helodesstrum Chapmanii. (Plate CLXX.)

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Thistle.</i>	<i>Purple.</i>	<i>Scentless.</i>	<i>Western Florida.</i>	<i>October.</i>

Flower-heads: large; solitary and terminal at the ends of slender branches. *Involucre*: with lanceolate, stiff scales, imbricated in many rows. *Rays*: showy, long, toothed, or entire at their summits. *Leaves*: those about the base, long; spreading; linear; those on the upper stem smaller; sessile and becoming bract-like; erect. *Stem*: two to three feet erect, sparingly branched above, smooth.

In the pine-barren swamps of its restricted range where many unusual plants are congregated, this slender and rather stiff-looking individual is conspicuous through its beautiful flower-heads, spread widely apart. Its foliage is not particularly noticeable.

**ROBIN'S OR POOR ROBIN'S PLANTAIN.
SPRING DAISY.**

Erigeron pulchellus.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Thistle.</i>	<i>Violet or purple.</i>	<i>Scentless.</i>	<i>Louisiana and Florida to Nova Scotia.</i>	<i>April-June.</i>

Flower-heads: growing on woolly peduncles in terminal clusters and being composed of both radiate and tubular flowers. *Involucres*: depressed, the bracts linear, often purple-tinted. *Leaves*: those about the base tufted, spatulate, or obovate lanceolate, blunt at the apex and tapering into margined petioles. *Stem-leaves*: smaller; lanceolate or ovate; sessile; entire or dentate; ciliate and closely covered with white hairs. *Stem*: six to twenty inches high, erect; simple, very woolly with white hairs.

It seems strange to see the robin's plantain in blow so early in the season as April when the spring is advanced, for it has much the look of an aster, a tribe of course closely identified with the autumn. In a rosette on the ground lie its basal leaves, and usually it rears itself jauntily on hillsides, or shady banks. It is a plant that is prematurely grey or, as its generic name quaintly signifies, early old. Almost before the wild flowers are well under way in a summer's sun, it displays its hoary pappus.

E. vernalis, early fleabane, sends upward a tall, nearly naked stem, with but a few bract-like leaves, and bears in a corymbed cluster many flower heads. They look much like little daisies, and often are so called, for the



PLATE CLXX. *Helcastrum Chapmanii*.
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ray-flowers are white and those of the disk yellow. Its principal leaves, however, are from the base, where they lie in a rosette on the ground. Usually they must be sought, so far away are they from the flowers, and when found are noticed to be obovate, or spatulate, entire, or obscurely dentate.

Of this genus there are numerous attractive members, the majority of them looking like daisies and having a tuft of leaves about their bases.

SPICY FLEABANE, SALT-MARSH FLEABANE.

Pluchea camphordita.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Thistle.</i>	<i>Pinkish lavender.</i>	<i>Strong.</i>	<i>Florida to Massachusetts.</i>	<i>August-October.</i>

Flower-heads: growing on pubescent peduncles in open, corymbose cymes. *Involucre*: campanulate with lanceolate, pink-tinted bracts. *Flowers*: all tubular. *Corolla*: thrice, or five times, cleft at their apices. *Leaves*: alternate, short petioled; oblong, or ovate, pointed at both ends, irregularly serrate, or dentate, smooth above and pubescent on the veins underneath. *Stem*: two to three feet high; erect; simple or mostly branched; leafy; pubescent or nearly glabrous.

In the salt marshes we see the pale bloom of this plant, which is credited with emitting an odour much like that of camphor and is therefore sought for to keep away moths. It is interesting to find that the very slender flowers, those which grow in the outer sides of the heads and are thrice cleft at their apices, are the pistillate ones, while those central ones, which have their corollas five-cleft, are perfect and mostly sterile. Other members of the not very abundant genus show much the same characteristics.

SMALL-FLOWERED LEAF-CUP. (Plate CLXXI.)

Polymnia Canadensis.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Thistle.</i>	<i>Pale yellow.</i>	<i>Scentless.</i>	<i>North Carolina northward.</i>	<i>June-September.</i>

Flower-heads: growing in terminal and axillary corymbose clusters and having an involucre of lanceolate, pointed bracts. *Ray-flowers*: minute, or none. *Disk-flowers*: with tubular, five-toothed corollas. *Achenes*: obovoid; three-ribbed. *Leaves*: large; opposite, occasionally alternate towards the base, with pubescent petioles; ovate, variously lobed, or lyrate pinnatifid; irregularly dentate; thin; dark green; somewhat hairy. *Stem*: two to five feet high; often branched; viscid-pubescent.

Between the three species of *Polymnia* which are herein included a most constant difference lies in their smooth achenes; those of this particular one showing but three ribs; those of *Polymnia Uvedalia*, many ribs; and those of *Polymnia lævigata*, always five ribs. But this is not to be wondered at, for so do plants often differ in details; when their larger and more apparent parts are similar. This genus is also one among the order *Compositæ*.



PLATE CLXXI. SMALL-FLOWERED LEAF-CUP, *Polymnia Canadensis*.
(516)

which produces no pappus. The scales of its receptacles are "chaffy." The smaller leaf-cup we find in shaded, moist places.

P. Uvedalia, yellow, or large-flowered leaf-cup, or yellow bear'sfoot, is decidedly a more showy species than the preceding one, as its ray-flowers are large and of a lively, bright shade of yellow. The cup-shaped involucre with ovate-oblong bracts shows also that they are ciliate about their margins, a feature again noticed about the leaves. Those of the lower stem are broadly-ovate with a strong inclination towards being angular and lobed, and attain sometimes enormous proportions. The plant exhales a peculiar, resinous odour, and late in the season the people collect its heavy root.

P. lavigata, the third species of *Polymnia* known in North America, has decidedly the prettiest leaves of them all, they being long-petioled and pinnately lobed, or divided often to within a quarter of an inch of the midrib, or the upper ones becoming deltoid-ovate. They are besides smooth and, when dried, as thin and crisp as tissue paper. The light-yellow flower-heads with their bell-shaped disk-flowers are not at all conspicuous, and, as has been mentioned, the achenes are five times ribbed.

PRAIRIE DOCK OR BURDOCK. RESIN PLANT.

(Plate CLXXII.)

Silphium terebinthineum.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Thistle.	Orange-yellow.	Scentless.	Louisiana and Georgia northward and westward.	July-September.

Flower-heads: growing in terminal, corymbose clusters and having both radiate and tubular flowers inclosed within an involucre of ovate, imbricated scales. *Rays*: twelve to twenty, long-oblong, slightly notched at the apex. *Disk-flowers*: very numerous; perfect; sterile. *Achenes*: obovate; flattened; two-toothed. *Leaves*: large; from the base with long, grooved petioles; oval, or ovate, bluntly pointed or rounded at the apex and tapering into petioles at the base, or being deeply cordate, sharply serrate, or remotely dentate; coarse; thick; rough. *Stem-leaves*: small; scale-like. *Stems*: four to ten feet high; finely grooved; smooth.

When through stony ground and often in dry woods, one sees a plant with such flower-heads as are shown in the illustration of this one, and then finds it has very large and coarse basal leaves, there is a rather good chance that it may be the prairie dock, although the perplexities arising among the composites are indeed great. The whole genus, however, is possessed of a resinous juice, which, especially of the species *Silphium laciniatum*, is obtained and considerably used by country people.

S. laciniatum, pilot, polar or compass-plant, resin or turpentine weed, is familiar from the prairies of Ohio southward to Alabama and Texas. It is very peculiar-looking, coarse, hispid and hairy, with alternate leaves deeply and pinnately divided and petioles that are very long. The whole plant,



PLATE CLXXII. PRAIRIE DOCK. *Silphium terebinthinaceum*.
(518)

in fact, grows to a great height, sometimes that of twelve feet. It is unusually rich in resin.

S. asteriscus, starry rosin-weed, one of the most showy of the genus, bears heads of flowers that at a glance suggest some one of the coreopses, and the bright yellow of which can be seen in open woodlands from Florida and Louisiana to Maryland. The ovate-lanceolate leaves are alternate, nearly sessile, entire or dentate, and the plant is, moreover, very roughly pubescent.

S. perfoliatum, Indian-cup or cup-plant, may be known by its square stem and by its leaves that are united, about the stem, at their bases. Its ray-flowers are very numerous and are toothed at their summits. Through our range, from Louisiana and Georgia northward, it occurs by streams in loamy soil.

CHRYSOGONUM.

Chrysogonum Virginianum.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Thistle.	Bright yellow.	Scentless.	Florida to Pennsylvania.	February-July.

Flower-heads : showy, solitary and terminal at the ends of erect scapes, covered closely as the involucre with silky, white hairs. *Involucre* : campanulate, its bracts imbricated in two rows of five each; the outer ones oblong and obtuse; the inner ones inconspicuous and subtending the pistillate ray flowers. *Rays* : mostly five-notched at their summits. *Tubular flowers* : five-toothed at the apices. *Leaves* : from the base, oval, or ovate, mostly blunt at the apex and tapering at the base into long silky petioles; crenate; covered on both surfaces with lustrous white hairs. A perennial herb reproducing itself by runners.

Extremely pretty are these small blossoms as, star-like, they peep out from among the grasses. When well grown, the plant often loses its simple habit and becomes considerably branched. It also reproduces itself by stolons, or runners, somewhat after the custom of some violets. It represents a monotypic genus.

GREEN-HEADED CONE-FLOWER.

Rudbeckia laciniata.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Thistle.	Yellow.	Scentless.	Florida to Quebec and westward.	July-September.

Flower-heads : large; showy, composed of both ray and disk flowers. *Involucre* : with unequal bracts. *Rays* : six to ten, large, one to two inches long, yellow, drooping. *Disk flowers* : greenish yellow, forming a cone. *Leaves* : alternate, the lower ones long petioled; very large; pinnately three to seven divided into broadly oblong-lanceolate, or obovate segments which are toothed and lobed, the terminal one being mostly three to five-parted. *Upper leaves* : ovate, not divided, toothed, or entire; thin; minutely pubescent. *Stem* : four to twelve feet high; branching; smooth.

The green-headed cone-flower is closely related to *Rudbeckia hirta*, our friendly black-eyed Susan, which seems to be generally known and the one with which we compare all others. Our present species is a rather smooth plant of swamps and moist thickets, where sometimes its lower leaves grow to be quite a foot long, and its large cone-like centres appear most effective.

The very hairy stem of black-eyed Susan is the feature that makes it so objectionable to farmers, as on its account horses refuse to eat of hay through which it is plentiful. The daisy they regard as "bad enough," for it impoverishes the soil; but even so, it is not as seriously dreaded as black-eyed Susan.

R. triloba, thin-leaved cone-flower, shows no such gorgeous blossoms as those of its preceding relative. Its bloom is rather small and is produced at the ends of slender, purple branchlets. The disk flowers on the rounded receptacle are also deep purple. Lanceolate, or ovate-lanceolate, are the upper leaves, while the lower and basal ones are thrice-parted and lobed. In texture they are thin and on both surfaces quite rough. The chaff of the receptacle is sharply awned.

R. heliopsisidis, occurring through the pine and oak woods of Georgia and Alabama, is distinctive in its oval or large ovate leaves, the lower ones having long petioles. Often they are abundantly covered with black dots and brightly tinted with purple. The chaff is very blunt and quite pubescent at the tip.

RED SUNFLOWER, PURPLE CONE-FLOWER, BLACK SAMPSON.

Brauneria purpurea.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Thistle.	Purplish crimson.	Scentless.	Louisiana and Alabama to Virginia and Kentucky.	June-October.

Flower-heads : very large ; showy ; terminal ; solitary and composed of both ray and disk flowers. *Involucre* : with lanceolate bracts, imbricated in from two to four series. *Ray flowers* : slender ; spreading or drooping. *Disk flowers* : with cylindrical corollas, five-toothed at their summits. *Leaves* : alternate, or opposite, with long, slender petioles, ovate, or ovate-lanceolate, pointed or long pointed at the apex, and rounded or tapering at the base ; serrate or dentate ; thin ; rough on both sides. *Stem* : erect, two to five feet high ; leafy ; smooth.

More gorgeous than any *Rudbeckia* and infinitely more charming are these great, heavy heads of crimson blossoms, which we might fancy almost could be seen without unclosing the eyes, when their turn has come to glow through rich soil and lowlands. Five, possibly six, species are recognised by some botanists in this country ; and although we associate them mostly with

the western prairies, where they bloom amid fields of grain or grass, two or three others occur within our range. Noteworthy among these is :

B. pallida, drooping cone-flower, which has rays longer, and more slender and drooping, than those of its relatives. Its cone of disk flowers is possibly higher and in outline, ovate. The leaves are lanceolate and entire.

SUNFLOWER. (Plate CLXXXIII.)

Helianthus longifolius.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Thistle.	Deep orange.	Scentless.	Alabama to Georgia.	September.

Flower-heads: growing on long, smooth pedicels in corymbose clusters and having both radiate and tubular flowers enclosed within an involucre of many imbricated and acutely pointed bracts. *Rays*: about ten, relatively small; long oblong, with two or more minute teeth at the apex. *Basal leaves*: tufted, spatulate, or linear-oblong, blunt at the apex, and tapering at the base into margined petioles. *Stem leaves*: mostly opposite; linear lanceolate, pointed at the apex with long margined petioles and becoming sessile and bract-like as they occur among the flowers; entire; glabrous. *Stem*: branching; slender; smooth.

For a long time but a fragmentary specimen of this rare sunflower, which was preserved in the Gray Herbarium at Harvard, was known to American botanists. Then strangely enough it was simultaneously found by three collectors from Biltmore Herbarium at De Soto Falls, near Valley Head, Alabama, for one place, and in the Sand Mountain region of that State for the other. Since that time it has been well distributed to the principal herbaria of the country. Through its range its preference is to grow near cliffs or rocky glades. In appearance it is delicate for a sunflower and of an intense richness of colour.

While this one is a rarity, there are, as we know, many other species of wild sunflowers turning their heads, as the supposition goes, to follow the sun. The idea has been transmitted through the Greek tradition that they are the embodiment of the water-nymph Clytie, who, grieving intently that Apollo returned not her love, sat on the ground and turned her head to follow the sun's course, until finally she became rooted to the spot and was transformed into the flower. Small wonder that it has since been regarded as an emblem of constancy.

H. Dowellianus, sunflower, for a long time regarded as a variety of *Helianthus occidentalis*, is a graceful one of the genus, with a deep red or brown, pubescent stem that adds greatly to its beauty. Its flower-heads grow in a terminal umbel, and their rays are deep yellow, lanceolate and often entire. Along the French Broad River in sandy bottoms it is not uncommon.

H. heterophyllus, both a slender and an attractive species of sunflower,



PLATE CLXXIII. SUNFLOWER. *Helianthus longifolius*.
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confines itself to the low pine-barrens in Louisiana and Florida or occurs in sandy soil along the coast to North Carolina. The rays of its mostly solitary flower-heads are vividly yellow and usually about an inch and a half long, while its opposite stem leaves are linear and those about the base oblong, or lanceolate.

H. strumosus, pale-leaved wood sunflower, is through dry soil one of the common species and is often found on mountain slopes. By its small flower-heads,—their involucre having bracts about as long as the disks,—and by its large, opposite, ovate-lanceolate leaves, it can be told from the others. Its common name is naturally in allusion to the leaves' pale undersurfaces. The stem of deep reddish purple is glaucous.

H. microcephalus, small wood sunflower, because of its very small flower-heads and coarse-looking, thin leaves, is a rather unattractive individual. On both sides its ovate-lanceolate foliage is rough. Mostly it grows in woodlands, or moist soil along the banks of streams.

SMALL YELLOW CROWNBEARD.

Verbesina occidentalis.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Thistle.	Yellow.	Scentless.	Georgia and Florida to Pennsylvania.	August-October.

Flower-heads: small; numerous; growing in loose, terminal corymbs. *Involucre*: campanulate, with lanceolate bracts; imbricated in two or more rows. *Rays*: one to five, slender. *Achenes*: flattened; wingless, with two divergent awns. *Leaves*: opposite; ovate, or ovate-lanceolate, long pointed at the apex and contracted into the margined petiole at the base; unevenly serrate, minutely pubescent. *Stem*: three to eight feet high; branches; four winged, pubescent.

Almost everywhere and in all kinds of soil, by roadsides, in dry thickets, on hillsides or following along water-courses, we find this common weedy-looking plant. Although many notice it, few are sufficiently inspired by its appearance to inquire as to its name. It belongs, however, to a large genus, the achenes of which are provided with awns and often with wings.

V. Virginica, small white crownbeard, varies perceptibly from the preceding species in bearing flower-heads which are larger and which produce white rays. Moreover its leaves are alternate, the upper ones lanceolate and sessile.

V. alternifolia, actinomeris, a plant with larger, more showy and more abundant flower-heads than either of its mentioned relatives, has also a globose disk and but few bracts in the involucre. These latter in fruit become reflexed. The leaves are lanceolate and rough on their upper surfaces. Often the plant grows tall and is very showy through its deep-yellow ray flowers.

RUNNING OR LOBED TICKSEED.

Coreöpsis auriculata.

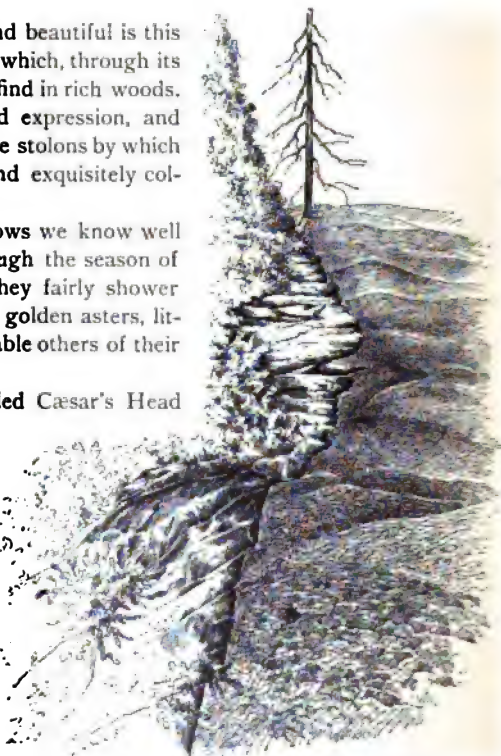
FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Thistle.	Deep orange.	Scentless.	Florida and Louisiana to Virginia and Kentucky.	May-August.

Flower-heads : terminal ; solitary and having both radiate and tubular flowers enclosed in an involucre of two sorts of green bracts. *Rays* : six to ten, spreading ; broad and from three to five-toothed at the apex. *Disk flowers* : numerous on a rounded receptacle. *Achenes* : oval ; winged. *Basal leaves* : ovate ; blunt at the apex and tapering at the base into margined pubescent petioles, entire, or with two small lobes at the base ; thin ; the younger ones covered with a soft white tomentum. *Stem leaves* : linear, to spatulate, with petioles or sessile. *Stems* : five to fifteen inches high ; erect, or decumbent ; simple, or branched ; pubescent, becoming smooth.

Slender and graceful and beautiful is this little one of the coreopses, which, through its purely southern range, we find in rich woods. It has a high-bred, refined expression, and the foliage, especially of the stolons by which it spreads itself, is soft and exquisitely coloured.

When the coreopsis blows we know well that we are treading through the season of golden-rayed flowers. They fairly shower gold, with the sunflowers, golden asters, little tickseeds and innumerable others of their clan.

At the time we ascended Cæsar's Head they were not yet in flower, but all the way up to that elevated place the plants were to be seen in great abundance, pulling themselves together, so to speak, for their supreme energy of bloom, which must later have spread gold as in sheets along the way, and tinted the waves of the landscape as seen from a spot in the shade of Little Cæsar. Many indeed of this genus do we encounter.



Cæsar's Head.

C. major, greater tickseed, growing to at most about three feet high, is a graceful inhabitant of open, sandy woodlands, where its pretty flower-heads raise themselves on very slender peduncles. Its sessile leaves, divided to the base into three lanceolate, entire segments, produce somewhat the same effect as though they were verticillate.

C. verticillata, whorled tickseed, found mostly through open pine-woods, is known by its peculiarity of having sessile leaves, twice or thrice dissected into thread-like, entire segments, and which occur at intervals in masses on the stem and thus produce a fine, light effect. The numerous flower-heads have usually from six to ten spatulate-oblong rays.

C. gladiata, on the contrary, is sparing in its foliage, the stems being naked above and its alternate leaves below quite distinct and slender. They are spatulate-oblong, tapering into long petioles, entire and fleshy. But the plant's beauty lies in its large, bright flower-heads with their deep-purple disks. Through Florida and North Carolina, especially in low pine-barrens, it makes its home.

C. nudata, tickseed, a rare find indeed, occurs mostly along the coast from Florida to Georgia, where its ray flowers gleam through the shallow ponds of pine-barrens as early as April. They show themselves in their often solitary heads to be rose-purple, and their rays—from eight to nine—are broadly oblanceolate and thrice-toothed at their apices. Of the alternate and linear leaves, those about the base are often nearly a foot long. The plant grows erectly, is smooth and slender, with branches forked towards their summits.

With *Coreopsis rosea*, the pink tickseed, which also grows in open swamps along the coast, it is the only one with other than yellow or particoloured rays.

C. tinctoria (Plate CLXXIV.), garden tickseed, we see sometimes as an escape, and its similarity to some of the wild species may serve to recall to the mind their personality.

LARGE BUR-MARIGOLD, BROOK SUNFLOWER.

Bidens laevis.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Thistle.	Golden.	Scentless.	Louisiana and Florida northward.	August-November.

Flower-heads: erect; numerous; showy; on short peduncles and composed of both tubular and radiate flowers. *Involucre*: with its bracts imbricated in two series, the outer ones being linear-oblong and larger than the inner, thin, ovate and coloured row. *Receptacle*: flat. *Rays*: usually entire, obtuse. *Disk flowers*: perfect; five-toothed. *Achenes*: flat, oblong, with two to four slender awns to the pappus. *Leaves*: simple, opposite, sometimes clasping at the base, lanceolate, or oblong-lanceolate, serrate. *Stem*: one to two feet high, erect, smooth, branched above.



PLATE CLXXIV. GARDEN TICKSEED. *Coreopsis tinctoria*.
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While the bur-marigolds, or beggar-ticks, as many call the members of this large genus indiscriminately, are closely related to the Rudbeckias, they suggest to us the coreopsis even more. Many of them are very pretty, but of all unscrupulous little bloomers in the world they seem to be the most so. Although they flare jaunty golden-heads, all the while they are preparing their flattened quadrangular or nearly terete seeds, with barbed and sharp pointed awns. These, later, attach themselves to anything ready to carry them along and disperse them at a distance from the parent stem. Fairly have they the power to render an autumn ramble almost miserable. It is quite impossible, it would seem, to avoid them. And then so in harmony with their purpose is the instinct of humanity, that few persons would be seen returning home while covered with their pods, but sit down by the edge of the woods or swamps to pick off the seeds and scatter them—usually in receptive soil.

B. frondosa, beggar-ticks, or stick-tight, has surely not much to recommend it in the way of beauty, as its flower-heads are without apparent rays. Although very common through fields and woods, often in fact a troublesome weed, it is never conspicuous, preferring, it would seem, to hide itself. In the autumn it makes its presence strongly felt, however, by its little flat and obovate achenes, each with two slender awns covered with minute, down-pointed prickles that enable them to secure a grim hold on almost anything. Its leaves are divided pinnately from three to five times, and always rather thin.

B. bipinnata, Spanish needles, also secures every year a fairly good distribution by means of its needle-shaped achenes, terminated at their summits by usually four short, spreading awns of the pappus. They are barbed downwardly—as the expression is—and are, therefore, able fairly to lay siege to anything passing their way. The achenes, curiously, are held by them in an upright position. The plant's foliage is thin and finely dissected, while the ray flowers, even when present, are short and not conspicuous.

MARSHALLIA.

Marshallia graminifolia.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Thistle.	Purplish.	Scentless.	Louisiana and Florida to North Carolina.	July, August.

Flower-heads: terminal; solitary and composed entirely of numerous, tubular, perfect flowers, their corollas pubescent, campanulate with the limb deeply five-parted. *Style branches:* long; anthers: blue. *Involucre:* with two rows of linear-lanceolate, nearly equal bracts. *Leaves:* alternate, spatulate, or linear-lanceolate, the lower ones narrowed at the base into margined petioles, the upper ones sessile, entire, smooth, pale green and once or thrice-nerved. *Stem:* two to three feet

high, erect; simple, or branched, leafy; smooth below, above pubescent with short purplish hairs.

This is indeed one of the very lovely inhabitants of low pine-barrens, and it is to be regretted that even through its known range it is seen so seldom. Until renamed by Dr. Small it was known as *Marshallia angustifolia*.

M. trinervia, broad-leaved *Marshallia*, another representative of this beautiful genus, bears purplish flowers in rounded, many-flowered heads. Its leaves are thin in texture, oval, or oval-lanceolate, three-nerved and with the lower ones among them tapering into long, sheathing petioles. From Mississippi to Virginia it flourishes in rather dry soil.

M. obovata, the species which early in the spring begins to bloom through dry pine-woods, suggests at a distance large, rounded heads of white clover that have stretched upward a little above their usual height. About its base spatulate leaves cluster thickly; while alternate, lanceolate ones, mostly blunt at the apex, clothe the lower part of the stem. They are nerved, very smooth and graceful. Only from Alabama and Florida to North Carolina does its range extend.

FLAVERIA.

Flaëria linedris.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Thistle.</i>	<i>Yellow.</i>	<i>Scentless.</i>	<i>Florida.</i>	<i>September.</i>

Flower-heads: small; growing densely in terminal corymbs, and composed of tubular flowers, with usually one that is radiate and also fertile. *Involucre:* with narrow, appressed, nearly equal bracts. *Disk flowers:* with their corollas five-toothed. *Pappus:* none. *Leaves:* opposite, linear, pointed at the apex and sessile or connate at the base; entire; smoothish, fleshy. *Stem:* one to two feet high, erect or somewhat prostrate at the base; branching at the summit; nearly smooth.

Not very frequently do we meet with members of this small genus; but when we are so fortunate we are interested in the peculiarity of their heads in bearing but one ray flower, or we think, perhaps, with the majority, that it is the remaining one, while others have been blown away. On the southern Keys and along the coast of Florida the plant grows, but nowhere is it very common. The genus is possessed of a yellow pigment which has been utilised in dyeing.

POLYPTERIS. (Plate CLXXV.)

Polypteris integrifolia.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Thistle.</i>	<i>White or purplish.</i>	<i>Sweet.</i>	<i>Florida to Georgia.</i>	<i>July-September.</i>

Flower-heads: numerous, composed of tubular flowers enclosed in an obconic involucre, with two rows of bracts, which are membranous and slightly coloured at their summits. *Flowers:* purplish; perfect; tubular, with deeply five-parted limb.



PLATE CLXXV. POLYPTERIS. *Polypteris integrifolia*.
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Style branches: long; thread-like; pubescent. *Achenes*: four-angled. *Pappus*: of linear scales. *Leaves*: alternate, or the lower ones opposite; lanceolate; entire; rather rough. *Stems*: one to two feet, branched above; smooth.

Hardly among the composites do we find sprays of florets more softly dainty and sweet than these. The first of them that I ever saw grew near Jacksonville in sandy ground bordering marshes where many small palms were scattered like stepping stones. A number of small pink hibiscus were blossoming near by, but the more constant companion of *Polypteris* was *Carphephorus corymbosus*. From the way the plant's slender stem is branched above, it was able to spread its flowers widely, and so through the other denser clumps of pinkish lavender the *Polypteris* sprays pushed their way, sometimes closing snugly about their rivals. The natives there seemed neither to know nor to care about either of these showy plants. All their attention was directed to the hound's-tongue, *Trilissa odoratissima*, which also was then abundantly in bloom.

FINE-LEAVED SNEEZEWEED.

Helénium tenuifolium.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Thistle.	Yellow.	Scentless.	Missouri and Florida to Virginia.	August-October.

Flower-heads: numerous; growing on slender peduncles in terminal corymbs and composed of both tubular and radiate flowers. *Rays*: four to eight, fertile, broadly wedge-shaped, squared, and three to four-toothed at their apices, drooping. *Disk*: globose; high; the flowers perfect; with corollas four or five-toothed, greenish yellow. *Involucre*: with few linear bracts, soon becoming reflexed. *Leaves*: alternate; linear-filiform, sessile, pale green. *Stem*: six inches to two feet high, much branched, slender, leafy, mostly glabrous.

The little sneezeweeds, or false sunflowers, as those of this genus are familiarly called, are readily known because they have their disk flowers raised in rounded heads. In this they are somewhat like the *Rudbeckias*, but even as though to show off this peculiarity their ray flowers have a drooping habit. Among them all, and in the autumn they are rather conspicuous, the fine-leaved sneezeweed is distinctive in its most abundant and fine, needle-like foliage. The group of plants is among those known to be poisonous to stock. Cows, in fact, have a fatal way of cultivating a taste for them, much to the regret of those that drink the milk rendered very bitter thereby. In a powdered form these plants are used in medicine for the purpose of producing sneezing, a practice of which their common name is an outcome.

H. brevifolium, sneezeweed, an unusually pretty one of these plants, grows in an erect, usually unbranched way and bears mostly terminal, solitary flower-heads, quite large and showy. On the stem its lanceolate and

sessile leaves are rather distinct, while the lower ones, spatulate-oblong, taper into margined petioles. Quite as early in the season as April and as late as into June it blows, mostly by the margins of ponds through pine-barrens.

H. autumnale, swamp sunflower, yellow star, or sneezeweed, is the common, abundant species which we all recognise by its round, compact disk of yellow flowers and its few, drooping and three-cleft rays. On slender peduncles these heads are borne and in a way much branched as a corymb. The leaves are oblong, or ovate-lanceolate, and the stem shows, as narrow wings, their decurrent bases. This one is dreaded as an obnoxious weed.

SWEET GAILLARDIA.

Gaillardia lanceolata.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Thistle.</i>	<i>Yellow and purple.</i>	<i>Sweet.</i>	<i>Florida to South Carolina and westward.</i>	<i>May-September.</i>

Flower-heads: large; solitary; terminal at the ends of the branches and composed of both tubular and radiate flowers. *Involucre*: with scales imbricated in two or three rows. *Rays*: eight to twelve, yellow with reddish veins, wedge-shaped, deeply three-lobed. *Disk flowers*: perfect; abundant; purple; their corollas five-toothed. *Leaves*: alternate; spatulate or narrowly lanceolate, sessile, bluntly pointed at the apex, entire, or the lower ones occasionally distantly serrate, minutely ciliate. *Stems*: one to three feet high, with long slender ascending branches; slightly pubescent.

In the dry pine-barrens, where so much that is beautiful in the plant world congregates, is where the sweet gaillardia loves best to grow. It is the most generally known species of the south, but occurs perhaps more abundantly in the-west, where, like others of the genus, it is called blanket-flower. Sometimes its flower-heads grow on branches so widely spread that they peep out unexpectedly through the undergrowth, several of them appearing as though they could hardly belong to the same plant.

LEOPARD'S BANE.

Arnica acaulis.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
<i>Thistle.</i>	<i>Yellow.</i>	<i>Scentless.</i>	<i>Florida to Pennsylvania.</i>	<i>April, May.</i>

Flower-heads: showy; growing on long peduncles bracted at the base in a terminal corymb and composed of both tubular and radiate flowers. *Rays*: oblong; minutely three-toothed. *Involucre*: campanulate, with lanceolate, appressed bracts. *Leaves*: those about the base tufted, spreading, oval, entire, or sparingly serrate, three to seven-ribbed, rough and hairy on both sides. *Stem leaves*: opposite; oblong, sessile. *Stem*: one to three feet high; erect; simple or sparingly branched; glandular-hirsute.

This, another of the golden-rayed flowers, lives its day in low woods or

pine-barrens, and unfolds early enough in the season to see many little harbingers of spring both bloom and perish. Its achenes are linear, and the pappus, a series of barbed, stiff bristles, well supplies them with a means of being carried along to a good germinating ground. Of course, millions and millions of seeds that have been matured never do reach fertile spots wherein they may grow; but weighing well the desperate chances and hair-breadth escapes they run, Nature must necessarily provide the seeds in superabundance.

SWEET-SCENTED INDIAN PLANTAIN.

Synsma suaveolens.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Thistle.	White or pinkish.	Sweet-scented.	Florida northward.	August-October.

Flower-heads: growing in abundant, terminal corymbs and composed entirely of tubular, perfect flowers. *Corolla*: five-cleft. *Involucre*: cylindric, with numerous lanceolate bracts. *Achenes*: oblong. *Pappus*: bristly. *Leaves*: alternate; hastate, pointed at the apex and tapering at the base into winged petioles, or the upper ones ovate and serrate; doubly and sharply serrate. *Stem*: three to five feet high; grooved; leafy; smooth.

Mesadenia atriplicifolia, pale Indian plantain, wild caraway, grows through woods in inland places from Florida to North Carolina and westward. A notable peculiarity of the genus *Mesadenia*, a group of about twelve species closely related to *Synsma*, is that while the flower-heads have a flat receptacle there is in the centres a fleshy little projection, somewhat like a tuber; and it is in reference to this fact that the Greek name was bestowed.

RAGWORT. (Plate CLXXVI.)

Senecio millefolium.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Thistle.	Orange.	Scentless.	Mountains of North Carolina.	June.

Flower-heads: growing on bracted peduncles in compound, terminal corymbs and having both radiate and tubular flowers. *Rays*: nine to twelve. *Disk flowers*: with tubular corollas, five-toothed. *Involucre*: campanulate. *Style-branches*: spreading. *Achenes*: with a pappus of white, fluffy bristles. *Leaves*: tufted about the base and alternate on the stem; lanceolate, and bipinnately divided into fine linear and toothed segments. *Stem*: one to two feet high, woolly when young, but smooth at maturity.

We cannot ignore the ragworts, for they have a wide distribution over the globe, and the genus is one that numbers not less than a thousand species. In America we must claim them as native weeds. They spread over the country great masses of golden yellow and yet get themselves greatly disliked through their reputation for causing hay fever. In almost every soil they thrive and appear in their various forms like many other



PLATE CLXXVI. RAGWORT. *Senecio millefolium*.
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golden-rayed flowers ; but always, in fruit, we may know them by their white pappus, appearing in some species hoary, as an old man, senex, the meaning of the generic name.

Our present plant inhabits only the high mountains through its range, where on rocky cliffs it blooms sometimes prolifically, although but a scanty soil has collected, the flower-heads massing in a brilliant orange against which the foliage appears fine and fern-like.

S. Smellii, Small's squaw-weed, becomes quite tall in many of its thick clumps, which are seen through the meadows and mountainous thickets from Virginia to North Carolina. Very numerous also are its deep-yellow flower-heads, while the basal leaves with long, slender petioles are linear-oblong and crenate-dentate. Covering the lower part of these petioles and about the lower stem there is a thick, white, woolly substance, loose and eventually becoming unattached. It appears not unlike cotton when first bursting from the seeds. This is the commonest species of its range.

S. tomentosus, woolly ragweed, ashwort, which occurs from Louisiana and Florida to New Jersey, is tall and odd-looking, partly because of the persistent, woolly, white covering of its parts—seen also in some degree over the whole plant. The young, basal leaves have often through this cause a texture somewhat like that of flannel. They are oblong and finely crenate-dentate, while the stem leaves—which, however, occur very distantly—are linear-lanceolate, or spatulate, and sessile.

S. obovatus, round-leaf squaw-weed, makes but a small showing of woolly covering about its base and is distinctive in its smooth sub-orbicular basal leaves which are irregularly crenate and taper into long margined petioles.

S. aureus, golden ragwort, swamp squaw-weed or false valerian, grows at its best in low, wet meadows, or swamp-borders, which it fairly covers in the spring with gold whose glow continues for a long time. But when unsuited with its soil the bloom is of much poorer appearance. It is a common species from Florida and Texas to Newfoundland, with orbicular, radical leaves, cordate at their bases. Generally it is smooth throughout. About its roots there is a strong, disagreeable scent, somewhat like that of valerian.

VIRGINIA THISTLE.

Carduus Virginianus.

FAMILY	COLOUR	ODOUR	RANGE	TIME OF BLOOM
Thistle.	Reddish purple.	Scentless.	Florida and Texas to Virginia and Kentucky.	April-September.

Flower-heads : one to one-and-a-half inches broad, with many tubular, perfect and similar flowers. *Corollas* : deeply five-cleft. *Involucre* : with slender scales imbricated in many series and bristle-tipped. *Leaves* : alternate, entirely lobed or



PLATE CLXXVII. SUNSET AT BLOWING ROCK.

As the sun dropped behind Grandfather Mountain, we watched from Blowing Rock the afterglow. In the sky there was not a cloud but what was tipped with vivid pink, or gold, and the sky itself was of the colour of fairest turquois. Distinct and silvery the virgin moon would have held more than one huntsman's horn. Over the great expanse of mountains hung a purplish mist stretching them softly against the sky. Only in the immediate foreground could be seen the greenness of plant-life.

From here Table Mountain had a different look from that when we had seen it from the summit of Roan, and Grandfather sustained apparently the position of contact with the sky. In the dim distance and higher than all others arose Mount Mitchell. Soon it became cold. The brilliant colours faded, and a great gust of wind came up through the rock from the depth below and lifted our hats far out of reach. A thick mist settled over the scene as the first evening star twinkled faintly.

(CLXXVII.)

pinnatifid, linear-lanceolate, the lower ones tapering into margined petioles, the upper ones sessile; all of them surrounded with bristles. On their upper surfaces rough with numerous scattered hairs; pale below and covered closely with tomentum. *Stem*: two to three feet high, simple or sparingly branched, slender and covered with tomentum.

Among all other plants there is no mistaking a thistle. It has an air, an individuality that speaks for itself. This is so with a golden-rod, a rose or a violet, each proclaiming at once its antecedents and its connections; but to know definitely just the separate place each one holds in the family, one must look closely at the individual.

The Virginia thistle blooms in thickets and dry barrens and has a slightly more ragged, unsymmetrical look about its heads of flowers than many another. It has also a stem rather naked above—a fortunate thing, should one desire to pick it to carry home for study or as an artistic model.

C. altissimus, roadside thistle, is the one familiar through fields and wood-margins, growing sometimes to a considerable height and branching all the way. Its flowers, mostly solitary at the ends of the branches and usually nearly two inches broad, are very showy with their masses of light purple flowers. Ovate-lanceolate are the sessile leaves and densely covered underneath with white tomentum. Along their margins, moreover, they are mostly dentate or lobed with teeth that are bristle-tipped.

C. lanceolatus, common burr, or spear thistle, we cannot claim as an American, it being a native of Europe and Asia. In this country, however, it is well naturalised and is often, unhappily, a troublesome weed. Its dark purple and large flower-heads are very familiar, especially as late in the autumn they linger in bloom.

C. spinosissimus, yellow thistle, produces but few flower-heads, but they are very large, often three inches in diameter, and while the flowers are usually pale yellow they also occur in deep rich purple. Their involucre is formed by the upper leaves, conspicuous as, in fact, is the whole plant by long spines. Many of the pinnatifid leaves are very large, their lobes being tipped with stiff prickles. Often by the edges of salt marshes and in dry soil the plant grows, from Texas and Florida to Maine.

C. Lecontei comes up with a simple, or, occasionally, branched, stem and throws out large, solitary, bell-shaped heads of purple flowers. Its lanceolate leaves, which on the lower stem are most abundant, are very spiny and fringed about with bristly hairs as well. Underneath they are hoary. The species is not a common one and occurs in the swamps of pine-barrens from Florida and Louisiana to North Carolina. Here those that seek may find it, as indeed might be said about all our wild flowers, trees and shrubs that make the beautiful and verdant spots of the earth.

Key to the Families Described in this Volume.

	PAGE
Ovules naked (not enclosed in an ovary)	
Stem branchless. Leaves pinnate	Cycas 1
Stem branching. Leaves simple	
Buds scaly, or naked	
Fruit a cone	Pine 2
Fruit a drupe	Yew 20
Ovules enclosed in an ovary	
Cotyledon one. Stem not separated into bark, wood and pith. Leaves mostly parallel-veined	
Carpels one or more and distinct	
Herbs. Inflorescence not a true spadix	Water Plantain 23
Herbs. Inflorescence a true spadix	Arum 32
Palms	Palm 26
Carpels united into a compound ovary	
Seeds with mealy albumen surrounding the embryo	
Epiphytes with scurfy leaves	Pine-apple 37
Terrestrial or aquatic. Leaves not scurfy	
Perianth of two series of parts	Spiderwort 38
Perianth corolla-like	Pickereel-weed 41
Seeds with fleshy or horny albumen surrounding the embryo	
Ovary superior or free from the calyx	
Fruit a capsule	Bunch-flower and Lily 45 and 50
Fruit a fleshy berry. Lily-of-the-valley and Smilax	58 and 62
Ovary inferior or more or less united with the calyx	
Stamen one	Canna 71
Stamens three	Iris 69
Stamens four	Stemona 44
Stamens six	
Flowers perfect	Amaryllis and <i>Aletis</i> in Lily 66, 50
Flowers imperfect	Yam 69

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Seeds minute and very numerous, without alburmen	Orchid	72
Cotyledons two. Stem separated into bark, wood and pith. Leaves mostly netted-veined.		
Petals none. Calyx either present or wanting		
Flowers in aments. Trees or shrubs		
Only the sterile flowers in aments		
Leaves simple	Beech	119
Leaves pinnate	Walnut	99
Fertile flowers in aments		
Aments globose	Plane-Tree, Mulberry and Witch-hazel	
		143, 227, 232
Aments oblong or linear		
Calyx none		
Fruit one-seeded	Bayberry and Corkwood	105, 109
Fruit many-seeded	Willow	109
Calyx present	<i>Morus</i> in Mulberry and Birch	115, 143
Flowers not in aments. Tree, shrubs and herbs		
Calyx none		
Marsh herbs	Lizard's-tail	97
Tree	Sweet gum in Witch-hazel	230
Plants of drier grounds	Spurge	299
Calyx present, sometimes corolla-like		
Ovaries more than one		
Leaves stipulate	<i>Neviusia</i> in Rose	241
Stipules none	<i>Ranunculus</i> in Crowfoot	183
Ovary one and superior or free from the calyx. Seed solitary		
Trees and shrubs		
Leaves stipulate	Elm and Mulberry	139, 143
Stipules none	Laurel	191
Herbs and vines		
Fruit an achene	Buckwheat	152
Fruit a capsule	Pink	158
Ovary one and superior or free from the calyx. Seeds numerous		
Leaves whorled	Crowberry	304
Leaves alternate	Box	304
Leaves opposite		
Fruit a single samara	Olive	419
Fruit a double samara	Maple	320
Fruit a drupe	Olive and Buckthorn	419, 328

Ovary one and inferior or united with the calyx

Ovary one celled *Nyssa* in Dogwood, Mistletoe
and Sandalwood 372, 144, 145

Ovary 2 or more celled *Fothergilla* in Witch-hazel
and Birthwort 230, 149

Petals present and not united

Stamens not borne on the calyx

Stamens more than twice as many as the petals

Leaves opposite St. John's-wort 339

Leaves alternate

Ovaries more than one, each one celled

Trees and shrubs Magnolia and Custard Apple 164, 169

Herbs Crowfoot and Water Lily 171, 162

Ovary solitary, 1 celled

Insectivorous plants' Sundew 208

Plants not insectivorous

Sepals deciduous

Leaves simple Purslane and Poppy 157, 194

Leaves compound Capewort and Crowfoot 205, 171

Ovary solitary, 2 or more celled.

Stamens connected with the base of the petals

Stamens united around the pistil into a column

Mallow 335

Stamens united in a-ring Tea 337

Stamens free from the petals

Stamens united in clusters Linden 332

Stamens separate Water Lily and Pitcher-plant 162, 205

Ovaries more than one Orpine 211

Ovary solitary, 1 celled

Leaves alternate Mimosa and Pea 257, 264

Leaves opposite

Fruit a capsule Pink and St. John's-wort 158, 339

Fruit a berry Barberry 187

Ovary solitary, 2 celled Milkwort 294

Ovary solitary, 3 or more celled

Flowers imperfect Spurge 299

Flowers perfect

Style single

Low, fleshy plants with bract--or scale-like leaves

Indian-pipe 375

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Leaves alternate and pinnate	Mahogany 293
Leaves opposite and pinnate	Caltrop 289
Leaves simple	White Alder and Heath 374, 376
Styles four	Orpine 211
Styles five	Geranium and Wood-sorrel 284, 285
Stamens more numerous than the petals, but not twice as many	
Ovary 1 celled	Poppy 194
Ovary 2 celled	Milkwort and Mustard 294, 198
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Leaves opposite	St. John's-wort and Buckeye 339, 324
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Fertile stamens as many as the petals	
Ovaries more than one	
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Flowers imperfect	Spurge 299
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Leaves alternate	Sundew and Saxifrage 208, 214
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Fruit a 2-winged samara	Maple 320
Fruit a single samara	Rue 290
Fruit a berry	Grape 330
Fruit dry, flowers perfect and racemed	Cyrilla 310
Fruit a drupe, flowers imperfect and clustered	Crowberry 304
Ovary solitary, 3-celled	<i>Galax</i> in <i>Diapensia</i> 402
Ovary 5-or more celled	Jewel Weed and Flax 326, 288
Stamens fewer than the petals	
Petals 4	Mustard 198
Petals 5	Pink 158
Petals and sépals hardly distinct, flowers very irregular	
see Jewel Weed	

Stamens borne on the calyx

Ovary superior, or free from the calyx

Stamens as many as the petals

Stamens monadelphous Passion Flower 352

Stamens separate, opposite the petals

Tendrils present Grape 330

Tendrils none Buckthorn 328

Stamens separate, alternate with the petals

Herbs Loosestrife 354

Woody plants

Fruit a double samara Maple 320

Fruit a drupe or berry Holly and Sumac 312, 306

Fruit with highly colored arils or coverings Stafftree 317

Fruit a bladder capsule Bladdernut 319

Fruit a capsule, leaves simple Saxifrage 214

Stamens more numerous than the petals

Ovaries more than one

Leaves alternate

Stipules present Rose 233

Stipules wanting Orpine 211

Leaves opposite Strawberry-shrub 190

Ovary solitary, 1-celled

Fruit a drupe Plum 251

Fruit a legume Senna and Pea 258, 264

Ovary solitary, 2-or more celled

Style single Loosestrife 354

Styles 2 Saxifrage and Maple 214, 320

Styles 2-3, each 2-3 parted. Spurge 299

Ovary inferior or united more or less with the calyx

Ovules more than one in each cavity of the ovary

Calyx tube merely enclosing the ovary

Anthers opening longitudinally Loosestrife 354

Anthers opening by pores at the apex. Meadow Beauty 356

Calyx tube adnate to the ovary. Storax, Evening Primrose 415, 407

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Stamens 5 Ginseng and Parsley 364, 362

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